

**M.D.UNIVERSITY, ROHTAK**  
**SCHEME OF STUDIES AND EXAMINATION M.TECH 1st YEAR (ELECTRONICS & COMMUNICATION)**  
**SEMESTER 1**  
**CBCS Scheme effective from 2016-17**

Sl. No	Course Code	Subject	Credit Pattern				Examination Schedule (Marks)				Duration of Exam (Hours)	No of Hours /week
			L	T	P	Total Credits	Marks of Class work	Theory	Practical	Total		
1	16ECE21C1	Advance Microprocessor & Microcontroller	4	0	-	4	50	100	-	150	3	4
2	16ECE21C2	Satellite and Space Communication	4	0	-	4	50	100	-	150	3	4
3	16ECE21C3	Information and Communication Theory	4	0	-	4	50	100	-	150	3	4
4	16ECE21C4	Advanced Digital Signal Processing	4	0	-	4	50	100	-	150	3	4
5	16ECE21C5	Data Communication Networks	4	0	-	4	50	100	-	150	3	4
6	16ECE21C6	Seminar	-	-	-	2	50	-	-	50		2
7	16ECE21CL1	Satellite Lab	-	-	2	2	50	-	50	100	3	4
8	16ECE21CL2	Advance Microprocessor & Microcontroller Lab	-	-	2	2	50	-	50	100	3	4
<b>TOTAL</b>							<b>26</b>					

NOTE:

**Examiner will set nine question in total. Question One will be compulsory and will comprise short answer type questions from all sections and remaining eight questions to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each Unit.**

**M.D.UNIVERSITY, ROHTAK**  
**SCHEME OF STUDIES AND EXAMINATION M.TECH 1st YEAR (ELECTRONICS**  
**& COMMUNICATION) SEMESTER 2**  
**CBCS Scheme effective from 2016-17**

Sl · No	Course No.	Subject	Credit Pattern			Examination Schedule (Marks)				Duration of Exam (Hours)	
			I	T	P	Total Credi ts	Marks of Class works	Theory	Practical		Total
1	16ECE22C1	Wireless Mobile Communication	4	0	-	4	50	100	-	150	3
2	16ECE22C2	Optical Communication	4	0	-	4	50	100	-	150	3
3	16ECE22C3	Seminar	-	-	-	2	50	-	-	50	
4	16ECE22CL1	VLSI Lab	-	-	2	2	50	-	50	100	3
5	16ECE22CL2	Optical Communication Lab	-	-	2	2	50	-	50	100	3
6	16ECE22D1 or 16ECE22D2 or 16ECE22D3 or 16ECE22D4	Elective-1	4	0	-	4	50	100	-	150	3
7		Open Elective				3					
8		Foundation Elective				2					
		<b>TOTAL</b>	<b>23</b>								

**NOTE:** Examiner will set nine questions in total. Question One will be compulsory and will comprise short answer type questions from all sections and remaining eight questions to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each Unit.

**Elective 1 : Choose any one from the following four papers:**

16ECE22D1 - Electronic System Design

16ECE22D2 - Image Processing

16ECE22D3 - ADVANCED MATHEMATICS FOR ENGINEERS

16ECE22D4 - VLSI Design

**Open Elective:** A candidate has to select this paper from the pool of Open Electives provided by the University.

**Foundation Elective:** A candidate has to select this paper from the pool of Foundation Electives provided by the University.

16ECE21C1

**ADVANCED MICROPROCESSOR &  
MICROCONTROLLERS**

L	T	P	Marks	Credits
4	-	-	Exams : 100	4
			Sessionals : 50	
			Total : 150	4
			Duration of Exam : 3 hrs.	

**SECTION - A**

**Design of basic microprocessor architectural Concepts :** Microprocessor architecture, word Lengths, addressable memory, Microprocessor's speed architectural characteristics, registers, instruction, memory addressing architecture, ALU, GPR's Control logic & internal data bus.

**Microprocessor Instructions & Communication:** Instruction Set ,Mnemonics, Basic Instruction Types, Addressing modes

,Microprocessor I/O connecting I/O put to Microprocessor ,Polling and Interrupts , Interrupt and DM. Controllers.

**SECTION B**

**Microcontroller:**Introduction 8051 architecture and programming model. Internal RAM and registers, I/O parts, Interrupt system & Instruction sets.

**SECTION C**

**Advanced microprocessors:**Intel X86 family of advanced Microprocessor, programming model for 86 family. X85 addressing modes, instruction set, hardware. Motorola 68 XXX family of microprocessor, 68XXX addressing modes , instruction set, hardware.

**SECTION D**

**Microprocessor I/O:** Data Communication, parallel I/O serial communication, Serial interface and UART modems, I/O devices, D/A,A/D interface, special I/O devices.

**Developing Microprocessor Based Products:**Introduction to the Design Process, Preparing the specifications, Developing a design, Implementing and Testing and design, Regulatory Compliance Testing, design tool for Microprocessor Development.

**Text Books:**

C.M. Gilmore, "Microprocessors Principals and Application", MGH

Rajkamal, "Embedded System, Architecture & Programming", TMH

**Reference Books:**

Berry B. Berry, " Inter Series of microprocessors", PHI

D. V. Hall, " Microprocessor & Interfacing", TMH

Peatman, "Microprocessor Based System Design", Pearson

**NOTE: For setting up the question paper, Question No. 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9**

questions.

## 16ECE21C2                      SATELLITE AND SPACE COMMUNICATION

L	T	P	Marks	Credits
4	-	-	Exams : 100	4
			Sessionals : 50	
			Total : 150	4
			Duration of Exam : 3 hrs.	

### Section-A

**Introduction :** Brief History of evolution & growth of communication satellite, Synchronous satellite, Satellite frequency allocation & Band spectrum, Advantages of satellite communication, Active & Passive satellite. Applications of satellite communication.

### Section-B

**Orbits of satellite:** Kepler's Laws , Low, medium and Geo synchronous main characteristics, Angle period, Returning period, Angle of Evaluation, Propagation Delay, Orbital Spacing.

**Satellite Links:** Design of down links, up link design, Delay transponders, Earth Stations, Antennas and Earth coverage, Altitude and eclipses

### Section-C

**Earth space propagation effects:** Free space loss, Atmospheric absorption, Rainfall Attenuation, Ionospheric scintillation, Telemetry, Tracking and command of satellites.

**Detection:** QPSK offset QPSK and MSK. Coherent and non coherent detection. Error rate performance.

### Section-D

**Synchronization:** Principle and techniques, Multiple Access Techniques, FDMA, TDMA system: concept and configuration, system timing frames format, VSAT, Random access, space communication, TELSAT and INSAT system. GPS systems

### Text Books

1. Satellite Communications : Dennis Roddy, TMH
2. Satellite Communication : D.C. Aggarwal ; Khanna Publishers.

### Reference Books

- 1 J. Martin: Communication Satellite System, PH Englewood.
- 2 Satellite Communication: T. Pratt and C.W. Boston, John Willey and sons
- 3 Satellite Communication : Monojit Mitra, PHI
- 4 Fundamentals of satellite Communication: K.N.Raja Rao, PHI

**NOTE:** For setting up the question paper, Question No. 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

**16ECE21C3**

**INFORMATION & COMMUNICATION THEORY**

L	T	P	Marks	Credits
4	-	-	Exams : 100	4
			Sessionals : 50	
			Total : 150	4
			Duration of Exam : 3 hrs.	

**SECTION A**

**Information Theory:** Concept of Information and Entropy, Shanon's theorems, Channel Capacity Self information, Discrete and Continuous entropy, Mutual and joint information, Redundancy.

**SECTION B**

**Coding Theory:** Source encoding & channel encoding, Error detection & Correction, Various codes for channel coding, Rate Distortion functions.

**SECTION C**

**Codes used in Information Theory:** Linear block codes, systematic linear codes & optimum coding for Binary symmetric channel, The Generator & parity check matrices, Syndrome decoding & Symmetric channels, Hamming codes, Weight enumerator, Perfect codes, BCH codes, Idempotent & Mattson Solomon polynomials, Reed Solomon codes, Justeen codes, MDS codes & generalized BCH codes, Convolution codes & Viterbi decoding algorithm.

**SECTION D**

**Performance of codes:** Performance of linear block codes & convolution codes, code incurable error probability Upper & lower bounds.

**Text books:**

1. Blahut R.E. , Theory and practice of error control codes, AWL1983.
2. Wilson, Digital Modulation and coding, Pearson

**Reference Books:**

1. B.P. Lathi, Communication System, Oxford
2. Ranjan Bose, Information Theory, Coding & Cryptography, TMH
3. J. Dass. , S.K. Malik & P.K. Chatterjee, Principles of digital communication

**NOTE:** For setting up the question paper, Question No. 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

**16ECE21C4**

**ADVANCED DIGITAL SIGNAL PROCESSING**

L	T	P	Marks	Credits
4	-	-	Exams : 100	4
			Sessionals : 50	
			Total : 150	4
			Duration of Exam : 3 hrs.	

**SECTION A**

**Introduction of DSP:** Introduction to Signal Processing, Discrete Linear Systems, superposition Principle, Unit-Sample response, stability & causality Criterion.

**Fourier Transform & inverse Fourier transform:** Frequency domain design of digital filters, Fourier transform, use of Fourier transform in Signal processing. The inverse fourier transform, Sampling continuous function to generate a sequence, Reconstruction of continuous -time signals from Discrete-time sequences.

**SECTION B**

**DFT & FFT & Z transform with Applications:** Discrete Fourier transform, properties of DFT, Circular Convolution, Fast Fourier Transform, Realizations of DFT. The Z-transform, the system function of a digital filter, Digital Filter implementation from the system function, the inverse Z- transform, properties & applications, Special computation of finite sequences, sequence of infinite length & continuous time signals, computation of fourier series & time sequences from spectra.

**SECTION C**

**Digital Filter Structure & Implementation:** Linearity, time- invariance & causality, the discrete convolution, the transfer function, stability tests, steady state response, Amplitude & Phase characteristics, stabilization procedure, Ideal LP Filter, Physical reliability & specifications. FIR Filters, Truncation windowing & Delays, design example, IIR Filters: Review of design of analog filters & analog frequency transformation. Digital frequency transformation. Design of LP filters using impulse invariance method, Bilinear transformation, Phase equalizer, digital all pass filters.

**SECTION D**

**Implementation of Filters:** Realization block diagrams, Cascade & parallel realization, effect of infinite-word length, transfer function of degree 1&2, Sensitivity comparisons, effects of finite precision arithmetic on Digital filters.

**Text Books**

1. Alam V. Oppenheim & Ronald W. Schafer, "Digital Signal Processing" PHI.
2. JG Proakis, "Digital Signal Processing", (PHI) 3rd Edition.

**Reference Books**

1. Rabiner & Gold, "Theory & application of digital Signal Processing", PHI 1992.
- Roman kuc, "Introduction to Digital Signal Processing," McGraw hill Edition.

NOTE: For setting up the question paper, Question No. 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to

attempt 5 questions out of 9 questions.

**16ECE21C5 DATA COMMUNICATION NETWORKS**

L	T	P	Marks	Credits
4	-	-	Exam : 100	4
			Sessionals : 50	
			Total : 150	4
			Duration of Exam : 3 hrs.	

**SECTION A**

**Introduction to Data Transmission:** Overview of Data Communication and networking, Analog And Digital Data Transmission, Transmission Impairments, Various Transmission Media, Data Encoding.

**Digital Data Communication Techniques :** Asynchronous And Synchronous Transmission, Error Detection and correction techniques, Physical interfaces

**SECTION B**

**Data Link Control:** Link Configurations, Protocol principles (Error control, Flow control), Bit Oriented and character oriented protocol, Data link layer services, Link Control.

**Multiplexing:** F.D.M. Synchronous TDM, Statistical TDM

**SECTION C**

**Communication Networking Techniques:** Communication Networks, Circuit Switching, Message Switching, Packet Switching, Local Networking Technology, The bus / tree topology, the ring topology, Medium Access control protocols (CSMA/CD, Token ring, FDDI, DQDB).

**SECTION D**

**Computer Communication Architecture:** OSI and TCP/IP Model, Protocol And Architecture, Networking Access protocols, Inter Networking, Transport layer Protocols, Session Service And Protocols, and Presentation/ Application protocols

**ISDN Networks:** Concepts & Architecture, Protocols

**Text Books :**

1. William Stallings, "Data and Computer Communication", PHI, 4<sup>th</sup> Ed.
2. Forouzan, "Data communications and networking", TMH

**Reference Books:**

1. Andrew Tanenbaum, "Computer Networking", PHI
2. Godbole, "Data communications and network", TMH

**NOTE: For setting up the question paper, Question No. 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.**

**16ECE21C6**

**SEMINAR**

L T P  
- - 2

	Marks	Credits
Sessional :	50	
Total :	50	2

Every student will be required to present a seminar talk on a topic approved by the Deptt. except on his/her dissertation. The committee constituted by the Head of the Deptt. will evaluate the presentation and will award one of the grades out of A+,A,B,C,D and E.

A Student who is awarded the 'F' grade will be required to repeat the seminar on the same topic.



**16ECE21CL1****SATELLITE LAB**

L	T	P	Marks	Credits
-	-	4	Exams : 50	
			Sessionals : 50	
			Total : 100	2
			Duration of Exam : 3 hrs.	

1. To Study the process of Transmitting Signal.
2. To Study the Base band Signal in a Satellite Link.
3. To estimate C/N Ratio.
4. To estimate S/N Ratio.
5. To setup digital satellite Communication Link.
6. To Study Black & White and Color T.V.
7. To plot radiation pattern of parabolic reflector.
8. To Study Satellite Communication Receiver.
9. To set up a PC to PC Sat. Com.Link using RS –232 port.
10. To measure the propagation delay of signal in a Sat.Com. Link.
11. To transmit & receive the function generator waveform through a Sat.Com. Link.
12. To set up a active & passive satellite communication link & study their difference.

**NOTE:**

The scheme of awarding the grades to a student in the course will be supplied by the University to the examiner

16ECE21CL2

**ADVANCED MICROPROCESSOR & MICROCONTROLLER  
LAB**

L	T	P	Marks	Credits
-	-	4	Exams : 50	
			Sessionals : 50	
			Total : 100	2
			Duration of Exam : 3 hrs.	

(A few experiments may be designed & included in this list depending upon the infrastructure available in the institute)

1. To study the architecture of 8086 Kit
2. Write an ALP to convert a hexadecimal No. to decimal No. in single step execution (DEBUG)
3. Write an ALP to enter a word from keyboard and to display
  1. Write an ALP for addition of two one digit Numbers.
  2. Write an ALP to display a string
  3. Write an ALP reverse a string
  4. Write an ALP to check whether the No. is Palindrome
5. To study the Microcontroller Kit
6. Write an ALP to generate 10 KHz frequency square wave
7. Write an ALP to generate 10 KHz & 100KHz frequency using interrupt
8. Write an ALP to interface intelligent LCD display
9. Write an ALP to interface intelligent LED display
10. Write an ALP to Switch ON alarm when Microcontroller receive interrupt
11. Write an ALP to interface one microcontroller with other using serial / parallel communication.

**NOTE:** The scheme of awarding the grades to a student in the course will be supplied by the University to the examiner.

## 16ECE22C1 WIRELESS MOBILE COMMUNICATION

L	T	P	Marks	Credits
4	-	-	Exams : 100	4
			Sessionals : 50	
			Total : 150	4
			Duration of Exam : 3 hrs.	

### SECTION A

**Introduction to mobile radio systems:** Paging systems, cordless telephone system, Cellular telephone systems- Cellular concept, frequency reuse, channel assignment strategies, Interference and system capacity, trunking and grade of service, cell splitting, sectoring, microcell zone concept, HO strategies.

### SECTION B

**Mobile radio propagation:** mechanism, free space path loss, log-distance path loss models, Okumara model, Hata model, PCS model, Wideband PCS microcell model, indoor propagation models, Jake's channel model, Multi path characteristics of radio waves, signal fading, Time dispersion, Doppler spread, coherence time LCR, fading statistics, diversity techniques

### SECTION C

**Introduction to spread spectrum communication, multiple access techniques used in mobile wireless communication:** FDMA/TDMA/CDMA, Cellular CDMA, packet radio protocols, CSMA, reservation protocols, capacity of cellular CDMA, soft HO

### SECTION D

**Wireless systems and standards:** GSM standards, signaling and call control, mobility management, location tracing, wireless data networking, packet error modeling on fading channels, Performance analysis of link and transport layer protocols over wireless channels, mobile data networking (mobile IP), wireless data services, IS-95, GPRS

#### Text Books:

1. T. S. Rappaport, "wireless Communications: Principles and practices", PHI 1996.
2. William C. Y. Lee, " Mobile Cellular Telecommunications, Analog and Digital Systems", 2nd ed, MGH-1995.

#### Reference Books:

1. Kaveh Pahlavan & Allen H. Levesque, "Wireless Information Networks", Wiley series in Telecommunications and signal processing.

Kamilo Feher: Wireless Digital communications, Modulation and Spread Spectrum Applications PHI 2001.

**NOTE: For setting up the question paper, Question No. 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question,**

which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

**16ECE22C2**

**OPTICAL COMMUNICATION**

L	T	P	Marks	Credits
4	-	-	Exams : 100	4
			Sessionals : 50	
			Total : 150	4
			Duration of Exam : 3 hrs.	

**SECTION A**

**Introduction:** Advantage of optical fiber communication, Elements of fiber communication link, Ray theory and electromagnetic mode theory for optical propagation, step index and graded index fibers, Numerical Aperture.

**Optical fibers, Losses & Dispersion:** Attenuation, Absorption, Linear and non-linear scattering losses, Dispersion, overall fiber dispersion, polarization, fiber bending losses, multimode step index and graded index fibers, single mode fiber, plastic clad and all- plastic fibers, optical fiber cables, dispersion shifted and dispersion flattened fibers, practical fiber profiles.

**SECTION B**

**Optical Sources:** Basic concepts: LED for Optical Communication, Burrus type double hetero-structure, Surface emitting LEDs, Shape geometry, Edge emitting LEDs, LED to fiber launch systems semiconductor Lasers Theory, modulation and characteristics, Fabry-Perot lasers quantum well lasers and distributed feedback lasers.

**Photo Detectors:** P.I.N Photo Diodes: Theory and their characteristics, Avalanche photo diode detectors, Theory and their band width noise in APD.

**SECTION C**

**Optical fiber communication System:** Optical transmitter circuit : LED and laser drive circuits, optical receiver circuit; Structure, Pre amplifier, AGC, Equalization, Optical power budgeting line loading , analog systems : analog modulation , direct modulation , sub carrier modulation , distribution system, Optical TDM sub-carrier multiplexing ,WDM .

**SECTION D**

**Coherent Systems :**Coherent receiver, Homodyne and heterodyne detection, noise in coherent receiver, polarization control, Homodyne receiver , Reusability and laser line-width, heterodyne receiver , synchronous, Asynchronous and self synchronous demodulation, phase diversity receivers.

**Text books :**

1. John Gower, "Optical Communication Systems", PHI.
2. Gerd Keiser, "Optical Fiber Communication", TMH

**Reference Books:**

1. Franz JH & Jain VK, "Optical Communication", Narosa Publns

John M. Senior, "Optical Communication", PHI

**NOTE: For setting up the question paper, Question No. 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question,**

**which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.**

**16ECE22D4**

**VLSI DESIGN**

L	T	P	Marks	Credits
4	-	-	Exams : 100	4
			Sessionals : 50	
			Total : 150	4
			Duration of Exam : 3 hrs	

**SECTION A**

**Review of MOS technology:** Basic MOS Transistors, Enhancement and Depletion mode transistors, N MOS and C MOS process, thermal aspects of processing, Production of masks.

**SECTION B**

**Electrical properties of MOS circuit :** Parameters of MOS transistors, pass transistors, N MOS inverter, Pull-up to pull down ratio for an N MOS inverter, C MOS inverters, MOS transistor circuit model, Latch up on C MOS circuits.

**SECTION C**

**Design processes :** MOS Layers, stick diagrams, Design rules, AWA OX C MOS process description, double metal single poly silicon, C MOS process.

**Basic circuit concepts:** Sheets resistance, area capacitance, delay unit, inverter delay, super buffers, propagation delays.

**SECTION D**

**Subsystem Design & Layout :** Architectural issues in VLSI, switch logic, gate logic, Examples of Combinational logic, Clocked sequential circuits, other system consideration.

**Scaling of MOS circuits :** Scaling factor, limitations, scaling of wires and interconnection, PLA and Finite state Machines.

**Design Examples :** Design of an ALU subsystems, carry look ahead address, parallel.

**Text Books:**

1. Pucknell D. A. and Eshrachain K, "Basic VLSI Design System & Circuits". (PHI), 1988.

Geiger, Rr, Allen P. E. Strader N. R., "VLSI Design Techniques for Analog and Digital Circuit", MGH1990`

**Reference Books:**

1. Wolf, "Modern VLSI Design", Pearson

SZE, "VLSI Technology", TMH

**NOTE: For setting up the question paper, Question No. 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.**

**16ECE22C3**

**SEMINAR**

L	T	P	Marks	Credits
-	-	2	Sessional : 50	2
			Total : 50	2

Every student will be required to present a seminar talk on a topic approved by the Deptt. except on his/her dissertation. The committee constituted by the Head of the Deptt. will evaluate the presentation and will award one of the grades out of A+,A,B,C,D and E.

A Student who is awarded the 'F' grade will be required to repeat the seminar on the same topic.

**16ECE22CL1****VLSI LAB**

L	T	P	Marks	Credits
-	-	4	Exams : 50	
			Sessionals : 50	
			Total : 100	2
			Duration of Exam : 3 hrs.	

1. Write a spice programme for CMOS inverter with following details.

pmos L = .8um W=12.0um, nmos = 8um W=2.4um, nmos (kp=60u Vto=0.6v)  
pmos(kp=20u Vto=-0.8v)

2. Write a spice programme for CMOS nand gate with following details :

Vdd=5 volt, pmos L=.8 um W=20um, nmos L = 8um W=um, nmos (kp=45u V to = 1.0v)  
pmos (kp=25u Vto=-1.2v)

3. Write a spice programme for CMOS nor gates with following details :

Vdd=5volt, pmos L=8um W=20um, nmos L=8um W=8um, nmos (kp=45u Vto=1.0v)  
Pmos (kp=25u Vto=-1.2v)

4. Design a d-latch with clk time period=6ns using nand gates with following specification :

L=2U W=100U for n&p-mos, For n-mos Kn'=60U Vto = 0.6V) for p-mos kp=20U  
Vto=0.8V)

5. Design a half adder using nand gates with following specifications :

for n-mos : L=20 W=100U, for p-mos L=2U W=650U, for n- mos Kn'=600 Vto=0.6V)  
for P-mos Kp=20U Vto=0.8v)

6. Design a full adder using half adder designed above.
7. Design the layout for PMOS in layout editor.
8. Design the Layout for NMOS in layout editor.
9. Design the layout for CMOS inverter with equal rise and fall time in layout editor.
10. Design the layout for 2-Input NAND gate.
11. Design the layout for 2-Input NOR gate.
12. Design the layout for clocked S-R flip-flop.

**16ECE22CL2****OPTICAL COMMUNICATION LAB**

L	T	P	Marks	Credits
-	-	4	Exams : 50	
			Sessionals : 50	
			Total : 100	2
			Duration of Exam : 3 hrs.	

(A few experiments may be designed & included in this list depending upon the infrastructure available in the institute)

1. Study of optical devices.
2. Study of fiber optical detector.
3. Study of fiber optical transmitters
4. Determination of numerical aperture of optical fiber
5. Study of characteristics of LED.
6. Study of characteristics of LASER diode.
7. Setting a fiber optic analog link.
8. Setting a fiber optic digital link.
9. Study of modulation demodulation of light source by direct amplitude modulation techniques.
10. Forming a PC to PC communication link using optical fiber & RS 232.
11. Setting up a fiber optic voice link.
12. Study of modulation & Demodulation of light source by PPM technique.
13. Study of modulation & Demodulation of light source by PWM technique.
14. Study of Propagation loss & sending loss in optical fiber.



**16ECE22D1**

**ELECTRONIC SYSTEM DESIGN**

L	T	P	Marks	Credits
4	-	-	Exams : 100	4
			Sessionals : 50	
			Total : 150	4
			Duration of Exam : 3 hrs.	

**SECTION A**

**Review of Digital Electronics concept**

**MSI and LSI Circuits And Their Applications:** Arithmetic Circuits, Comparators, Multiplexers, Code Converters, XOR And AND-OR INVERTER Gates, Wired Logic, Bus Oriented Structures, Tri-State Bus System, Propagation Delay.

**SECTION B**

**Sequential Machines:** The Concept Of Memory, The Binary Cell, The Cell And The Bouncing Switch, Set / Reset, D, Clocked T, Clocked JK Flip Flop, Design Of Clock F/F, Conversion, Clocking Aspects, Clock Skew, State Diagram Synchronous Analysis Process, Design Steps For Traditional Synchronous Sequential Circuits, State Reduction, Design Steps For Next State Decoders, Design Of Out Put Decoders, Counters, Shift Registers and Memory.

**SECTION C**

**Multi Input System Controller Design:** System Controllers, Design Phases And System Documentation, Defining The System, Timing And Frequency Considerations, Functional, Position And Detailed Flow Diagram Development, MDS Diagram, Generation, Synchronizing Two System And Choosing Controller, Architecture, State Assignment, Next State Decoders And Its Maps, Output Decoders, Clock And Power Supply Requirements, MSI Decoders, Multiplexers In System Controllers, Indirect Addressed Multiplexers Configurations, Programmable System Controllers, ROM, PLA And PAL Based Design. Introduction to the CPLD & FPGA.

**SECTION D**

**Asynchronous Finite State Machines:** Scope, Asynchronous Analysis, Design Of Asynchronous Machines, Cycle And Races, Plotting And Reading The Excitation Map, Hazards, Essential Hazards Map Entered Variable, MEV Approaches To Asynchronous Design, Hazards In Circuit Developed By MEV Method.

Text Books:

1. Fletcher, "An Engineering Approach to Digital Design" PHI 1990
2. Z. Kohavi, "Switching and Finite Automata Theory", TMH

**Reference Books**

1. Markovitz, "Introduction to Logic Design", TMH
2. Mano, " Digital Design", PHI

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compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

## 16ECE22D2

## IMAGE PROCESSING

L	T	P	Marks	Credits
4	-	-	Exams : 100	4
			Sessionals : 50	
			Total : 150	4
			Duration of Exam : 3 hrs.	

### SECTION A

**Introduction:** Elements of Digital Image Processing Systems, Image Acquisition, Storage, Processing Communication Display.

**Digital Image Fundamentals:** Visual Perception, simple image models, concept of uniform and nonuniform sampling & quantization, Relationships between pixels-neighbors of pixel, connectivity labeling of connected components. Relations, equivalence and Transitive closure, Distance measures, Arithmetic/ Logic operation, Imaging Geometry Basic and perspective transformation stereo imaging.

### SECTION B

**Image Transforms:** Discrete Fourier transform, 2-D Fourier Transforms and its properties. Fast Fourier transform and its uses. Walsh, Hadamard Discrete cosine, Heir and slant transforms hostelling their algorithms and computer implementations.

**Image Enhancement:** Spatial and frequency domain methods point processing, intensity transformation, Histogram processing image substation and Averaging spatial filtering, LP, HP and homo- morphic felling, generation of spatial marks, Color image processing.

### SECTION C

**Image Restoration:** Degradation model, digitalization of circulate and block circulate metrics, Algebraic approved invoice filtering, wiener filter, constrained least square restoration, Interactive restoration in spatial domain geometric transformation.

**Image Compression:** Redundancy models, error free compression, Lossy compression, Image compression standards.

### SECTION D

**Image Segmentation:** Detection of Discontinuity, Edge detection, Boundary detection, Thresholding, Regional oriented segmentation use of motion in segmentation.

**Representation and Description:** Image analysis, Pattern and their classes, Decision theoretical methods, Structural methods, Interpretation.

#### Text Books:

1. Anil K Jain, "Fundamentals of Digital Image Processing", PHI Edition 1997.
2. Keenneth R Castleman, "Digital Image Processing", Pearson

#### Reference Books:

1. Rafael C. Gonzalez and Richard E. Woods, "Digital Image Processing", Pearson
2. Chanda & Majumder, "Digital Image Processing & Analysis", PHI

**NOTE:** For setting up the question paper, Question No. 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question,

which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

### 16ECE22D3 ADVANCED MATHEMATICS FOR ENGINEERS

L	T	P	Marks	Credits
4	-	-	Exams : 100	4
			Sessionals : 50	
			Total : 150	4
			Duration of Exam : 3 hrs.	

#### SECTION A

**Fourier Transforms:** Introduction, Fourier Integral Theorem, Fourier Sine and Cosine Integral, Complex form of Fourier Integrals, Fourier Transforms, Inverse Fourier Transform, Properties, Modulation Theorem, Convolution Theorem for Fourier Transforms, Parseval's Identity, Fourier Transforms of derivative of functions, Relation between Fourier and Laplace transform.

#### SECTION B

**Z -Transform** : Introduction, Properties of Z- Transform, Evaluation of inverse Z – Transform.

#### SECTION C

**Matrices And Linear System Of Equations:** Solution of linear simultaneous equations by Gaussian elimination and its modification, Crout's triangularization method, Iterative methods- Jacobins method, Gauss-Seidal method, Determination of Eigen values by iteration.

#### SECTION D

**Conformal Mapping:** Conformal mapping, linear transformations, Bi-linear transformations, Schwarz's-Christoffel transformations.

**Calculus Of Variations:** Euler-Lagrange's differential equation, The Brachistochrone problems and other applications. Isoperimetric problem, Hamilton's Principle and Lagrange's Equation. Rayleigh-Ritz method, Galerkin method.

#### Text Book:

1. Dr. B.S. Grewal; "Higher Engineering Mathematics", Khanna Publishers
2. Churchill, "Fourier Series and Boundary Values Problems", McGraw Hill.
3. Galfand & Fomin, "Calculus of Variations", Prentice Hall.

#### Reference Books:

1. Churchill, "Complex Variables & Applications", McGraw Hill.
2. Elsgole, "Calculus of Variations", Addison Wesley.
3. I.N. Sneddon. "The Use of Integral Transforms", Tata McGraw Hill.

**NOTE:** For setting up the question paper, Question No. 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be

**set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.**

**M.DUNIVERSITY**  
**SCHEME OF STUDIES AND EXAMINATION**  
**M.TECH 2nd YEAR (ELECTRONICS & COMMUNICATION)**  
**SEMESTER 3rd**  
**CBCS Scheme effective from 2017-18**

Sl. No	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				Duration of Exam (Hours)	No of Credits
			L	T	P	Total	Marks of Class works	Theory	Practical	Total		
1	17ECE23C1	Neural Networks & Fuzzy Logics	4	0	-	4	50	100	-	150	3	4
2	17ECE23C2	CDMA	4	0	-	4	50	100	-	150	3	4
3	17ECE23C3	DISSERTATION (PHASE-I)	-	-	-	4	100	-	-	100		2
4	17ECE23C4	Seminar	-	-	-	2	50	-	-	50		2
5	17ECE23CL1	Project	-	-	2	2	50	-	50	100		2
6	17ECE23CL2	MATLAB Lab	-	-	2	2	50	-	50	100		2
7		OPEN ELECTIVE										3
		<b>TOTAL</b>										<b>21</b>

NOTE:

1. Students will be allowed to use non-programmable scientific calculator. However, sharing of Calculator will not be permitted in the examination.
2. Students have to publish a research paper in a journal / conference on the basis of literature survey done in the semester.

OPEN ELECTIVE: A candidate has to select this paper from the pool of open electives provided by the University.

**M.D UNIVERSITY**  
**SCHEME OF STUDIES AND EXAMINATION**  
**M.TECH 2nd YEAR (ELECTRONICS & COMMUNICATION)**  
**SEMESTER 4th**  
**CBCS Scheme effective from 2017-18**

Sl. No	Course No.	Subject	Teaching Schedule				Examination Schedule (Marks)				No of Credits
			L	T	P	Total	Marks of Class works	Theory	Practical	Total	
	17ECE24C1	Dissertation and viva	-	-	-	-	250	-	500	750	<b>20</b>
		<b>TOTAL</b>	-	-	-	-	<b>250</b>	-	<b>500</b>	<b>750</b>	
		<b>GRAND TOTAL</b>									

NOTE:

- 1. Students have to publish a research paper in a journal / conference of the research work done in the semester.**

17ECE23C1

## NEURAL NETWORKS & Fuzzy Logics

L	T	P	Marks	Credits
4	-	-	Exams : 100	4
			Sessionals : 50	
			Total : 150	4
			Duration of Exam : 3 hrs.	

### SECTION A

**Introduction:** Neural networks characteristics, History of development in neural networks principles, Artificial neural net terminology, Model of a neuron, Topology.

### SECTION B

**Learning Methods & Neural network models:** types of learning, Supervised, Unsupervised, Re-inforcement learning. Knowledge, representation and acquisition. Basic Hop field model, Basic learning laws, Unsupervised learning, Competitive learning, K-means clustering algorithm, Kohonen's feature maps.

### SECTION C

**Artificial Neural Networks:** Radial basis function neural networks, Basic learning laws in RBF nets, Recurrent back propagation. Introduction to counter propagation networks, CMAC network, and ART networks.

### SECTION D

**Fuzzy Logic:** Basic concepts of fuzzy logic, Fuzzy vs. Crisp set, Linguistic variables, Membership functions, Fuzzy sets & Operations of fuzzy sets, Fuzzy IF- THEN rules, Variable inference techniques, De-Fuzzification, Basic fuzzy inference algorithm, Fuzzy system design, Industrial applications.

#### Text Books:

1. B. Yegnanarayana, "Artificial Neural Networks" PHI
2. J.M. Zurada, "Introduction to artificial neural systems", Jaico Pub.
3. ROSS J.T, "Fuzzy logic with engineering application", TMH

#### Reference Books:

1. Simon Haykin, "Neural Networks", PHI
2. Ahmad M.Ibrahim, "Introduction to applied Fuzzy Electronics", (PHI)
3. P.D. wasserman , "Neural computing theory & practice", (ANZA PUB).

**NOTE:** For setting up the question paper, Question No. 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.

**17ECE23C2**

**CDMA SYSTEMS**

L	T	P	Marks	Credits
4	-	-	Exams : 100	4
			Sessionals : 50	
			Total : 150	4
			Duration of Exam : 3 hrs.	

**SECTION A**

Direct sequence and frequency hopped spread spectrum, spreading sequence and their correlation functions, Acquisition and tracking of spread spectrum signals.

**SECTION B**

Error probability for DS-CDMA, on AWGN channels, DS- CDMA on frequency selective fading, channels, Performance analysis of cellular CDMA

**SECTION C**

Capacity estimation, Power control, effect of imperfect power control on DS CDMA performance, Soft Handoffs.

**SECTION D**

Spreading /coding tradeoffs, multi-carrier CDMA, IS-95 CDMA system, third generation CDMA systems, multi-user detection.

**Text Books:**

1. Andrew J. Viterbi, "CDMA Principles of spread spectrum communications", Addison Wesley 1995.
2. J.S. Lee and L.E. Miller, "CDMA system Engineering handbook", Artech house 1998.

**Reference Books:**

1. Garg, "CDMA : 2000 : Cellular/ PCS system Implementation", Pearson
2. Steve Lee, "Spread spectrum CDMA", TMH

NOTE: For setting up the question paper, Question No. 1 will be set up from all the four sections which will be compulsory and of short answer type. Two questions will be set from each of the four sections. The students have to attempt first common question, which is compulsory, and one question from each of the four sections. Thus students will have to attempt 5 questions out of 9 questions.



**17ECE23C3**

**DISSERTATION (PHASE-I)**

L	T	P	Marks	Credits
-	-	4	Exams :	
			Sessionals :	100
			Total :	100      2
			Duration of Exam :	3 hrs.

Every student will carry out dissertation under the supervision of a Supervisor(s). The topic shall be approved by a Committee constituted by the Head of the concerned Deptt.

Every student will be required to present two seminar talks, first at the beginning of the Dissertation (Phase-I) to present the scope of the work and to finalize the topic, and second towards the end of the semester, presenting the work carried out by him/her in the semester. The committee constituted will screen both the presentations so as to award the sessional grades out of A+, A, B, C, D and E. A student scoring 'F' grade shall have to improve this grade before continuing his/her Dissertation in the 4<sup>th</sup> semester failing which he/she shall have to repeat the Dissertation (Phase-I) next time in the regular 3<sup>rd</sup> semester

**17ECE23C4****SEMINAR**

L	T	P	Marks	Credits
-	-	2	Sessional : 50	2
			Total : 50	2

Every student will be required to present a seminar talk on a topic approved by the Deptt. except on his/her dissertation. The committee constituted by the Head of the Deptt. will evaluate the presentation and will award one of the grades out of A+,A,B,C,D and E.

A Student who is awarded the 'F' grade will be required to repeat the seminar on the same topic.

17ECE23CL2

**MATLAB Lab**

L T P  
- - 2

Total Credits: 2

**UNIT 1 MATLAB FUNDAMENTALS:** Introduction, platforms and versions, launching MATLAB, window, help features, types of file, creating directory and saving files, notation, syntax and operations, constants, variables and expression, some built in function, commands, problems.

**UNIT 2 VECTORS & MATRICES:** Addition, subtraction, multiplication, vector products and transpose, commands, problems.

**UNIT 3 MATLAB PROGRAMMING:** Input-Output Statements: data input, interactive input, output command. Programming in M files, script and function files, variables, data types, operators, control structures

**UNIT 4 GRAPHICS USING MATLAB:** Creating plots, 2-D, 3-D, multiple plots, editing plots, visualizing function of two variables, image Printing graphics, handle graphics, GUI, problems.

**UNIT 5 INTRODUCTION TO TOOLBOXES:** The symbolic math toolbox, control system toolbox, signal processing toolbox, communication toolbox, MATLAB applications, animation, problems.

**UNIT 6 SIMULINK BASICS:** Introduction, simulink model editor, simulink library, blocksets, running a simulation, building simple model, problems with models.

**Reference Books:** 1. MATLAB and its Applications in Engineering, Raj Kumar Bansal, Ashok Kumar Goel, Manoj Kumar, Pearson Education.  
2. Partha S Mallick, Matlab and Simulink: Introduction to Applications, 2nd edi, SCITECH.  
3. K K Mishra, Numerical Technique Lab Matlab Based Experiments, I K international publishing house. NOTE: At least 10 experiments are to be performed by students in the semester as per the

**17ECE24C1****DISSERTATION**

L	T	P	Marks	Credits
-	-	20	Sessionals : 250	
			Practical Exam : 500	
			Total : 750	20
			Duration of Exam. : 3 hours.	

The Dissertation Phase-1 will be continued as dissertation in 4<sup>th</sup> Semester. The award of sessional grades out of A+, A, B, C, D and E will be done by an internal Committee constituted by the Head of the Deptt.

This assessment shall be based on presentation (s), report, etc. before this committee. In case a student scores 'F' –grade in the sessional, failing which he/ she will not be allowed to submit the dissertation.

At the end of the semester, every student will be required to submit three bound copies of his/her Master's dissertation of the office of the concerned Department. Out of these, one copy will be kept for department record & one copy shall be for the supervisor. A copy of the dissertation will be sent to the external examiner by mail by the concerned department, after his/her appointment and intimation from the university. Dissertation will be evaluated by a committee of examiners consisting of the Head of the Department, dissertation supervisor(s) and one external examiner. There shall be no requirement of a separate evaluation report on the Master Dissertation from the external examiner.

The external examiner shall be appointed by the University from a panel of examiners submitted by the respective Head of Deptt., to the Chairman, Board of Studies. In case the external examiner so appointed by the University does not turn up, the Director/ Principal of the concerned college, on the recommendation of the concerned Head of the Deptt. Shall be authorized, on behalf of the University., to appointed an external examiner from some other institution.

The student will defend his/her dissertation through presentation before this committee and the committee will award one of the grades out of A+, A, B, C, D and E Student scoring 'F' grade in the exam shall have to resubmit his/her Dissertation after making all correction

/ improvements and this dissertation shall be evaluated as above. **Note:** The Scheme of awarding the Grades to the student in the course will be supplied by the University to the examiner(s).

**M.D.U., ROHTAK**  
**Session 2018-19**

**A) Foundation Elective Courses**

Students of all PG programmes under CBCS (w.e.f. 2018-19) are required to study one foundation elective course in 2<sup>nd</sup> semester for 2 years Programmes and in 4<sup>th</sup> Semester for 3 years Programmes. They may choose any one of the following courses (excluding the courses offered by the departments of their own subjects, if not stated otherwise).

<b>Sr. No.</b>	<b>Nomenclature of the course</b>	<b>Course Code</b>	<b>Offered by the Department of</b>
1	Basics of Accounting	16COMF1	Commerce
2	Basics of E-Commerce	16COMF2	Commerce
3	Elements of Banking	16COMF3	Commerce
4	Computer Fundamentals	16CSAF1	Computer Science & Application
5	Appreciation of Short Stories	16ENGF1	English & Foreign Languages
6	Appreciation of Poetry & Prose	16ENGF2	English & Foreign Languages
7	Appreciation of Fiction	16ENGF3	English & Foreign Languages
8	Appreciation of Drama	16ENGF4	English & Foreign Languages
9	Moral Education	16GENF1	Genetics
10	Geography in Everyday Life	16GEOF1	Geography
11	Hindi language and Communication Skill	16HNDF1	Hindi
12	Food of India	18MHMCTF1	IHTM
13	Food & Dining Services	18MHMCTF2	IHTM
14	Entrepreneurship Development	16IMSF1	IMSAR
15	Communication and Soft Skills	16IMSF2	IMSAR
16	Introduction to Mass Media	17JRM01	Journalism
17	Media law	16LAWF1	Law
18	Appreciation of Indian Music	16MUSF1	Music
19	Psychology for Everyday Living	16PSYF1	Psychology
20	Electronics Engineering	16 ECE F1	UIET (Electronics & Communication)

**(Foundation Elective Paper)**  
**Basics of Accounting**  
**Paper Code: 16COMF1**

Total Marks: 50  
External Marks: 40  
Internal Marks: 10

**Time: 3 Hours**  
**Credits = 02**

**Note:** The examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of equal marks. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All questions shall carry equal marks

**Unit-I**

Meaning of Accounting, Accountancy and Book Keeping, Objectives of Accounting, Scope of Accounting, Types of Accounting, Limitations, Basic Accounting Terms, Double Entry System of Book Keeping, GAAP (Generally Accepted Accounting Principal), Basic accounting Equations

**Unit-II**

Journalizing: Classification of Accounts, Personal, Real and Nominal; Recording & posting of simple transactions only.

**Unit-III**

Preparation of Subsidiary Books: Cash Book(single column cash book) Purchase Book, Sales Book, Purchase Return, Sales Return Book, B/R and B/P Book.

**Unit-IV**

Preparation of Trial Balance, Preparing the Financial Statements Trading Account, Profit and Loss Account and Balance Sheet of sole proprietary business (Without Adjustment).

**Suggested Readings:**

1. D.K. Goyal: Financial Accounting, Arya Publications Pvt Ltd.
2. S.N. Maheshwari : An introduction to Accounting, Vikas Publishing House Pvt. Ltd.
3. Nishat Azmat and Andy Lymer: Basic Accounting: The step-by-step course in elementary accountancy, Kindle Edition
4. Anthony, R.N., and J.S. Reece, "Accounting Principles", Richard D. Irwin, Inc.
5. Monga, j.R., "Financial Accounting: Concepts and Applications", Mayoor Paper Backs, New Delhi.
6. Shukla, M.C., T.S. Grewal and S.C.Gupta, "Advanced Accounts", Vol-I, S.Chand & Co., New Delhi.

7. Gupta, R.L. and M. Radhaswamy, "Advanced Accountancy", Vol-I, Sultan Chand & Sons, New Delhi.

**(Foundation Elective Paper)**  
**Basics of E-Commerce**  
**Paper Code: 16COMF2**

Total Marks: 50  
External Marks: 40  
Internal Marks: 10  
**Time: 3 Hours**

**Credits = 02**

**Note:** The examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of equal marks. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All questions shall carry equal marks

**Unit-I**

E-Commerce: Meaning, Concept, Definitions, Origin and Development, Categories of E-Commerce: B2B, B2C, B2G, G2G,G2C; The Constitution of the E-Commerce: Portal of the Network, Customer Relationship Management, Supply Chain Management, Logistic Management, Decision Support; Supporting Environment for E-Commerce: Technical Environment, Legal Environment, Credit Environment and Financial Environment.

**Unit-II**

M-Commerce: The Origin of M-Commerce, M-Commerce Components, The Development of M-Commerce, The Application of M-Commerce

**Unit-III**

Payment Technologies for E-Commerce: Online Bank, E-Payment Tools: E-Payment System, Intelligent Card, E-check, E-wallet, E-Cash

**Unit-IV**

Electronic Commerce: Influence on Marketing: Product, Physical Distribution, Price, Promotion, Marketing Communication, Common e-Marketing Tools



**(Foundation Elective Paper)**  
**Elements of Banking**  
**Paper Code: 16COMF3**

Total Marks: 50  
External Marks: 40  
Internal Marks: 10

**Time: 3**

**Hours**

**Credits = 02**

**Note:** The examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of equal marks. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All questions shall carry equal marks

**Unit-I**

Introduction to Banking: Meaning, Concept, History of Banking, Business of Banking, Functions of Banking, Banker Customer Relationship, Recent Developments in Banking Industry: Corporate Banking, Retail Banking, International Banking, Rural Banking, Non-Banking Financial Intermediaries

**Unit-II**

Structure of Commercial Banks in India: Structure of Indian Banking System, Reserve Bank of India, Commercial Banks, Public Sector Banks, Private Sector Banks, Foreign Banks, Indian Banks vs. Foreign Banks.

**Unit-III**

Structure of Co-operative Banks in India: Co-operative Banks: Meaning, Definitions, Commercial vs. Co-operative Banks, Regional Rural Banks

**Unit-IV**

Structure of Apex Banking Institution in India: Meaning, Definitions, National Bank for Agriculture and Rural Development (NABARD), National Housing Bank (NHB), Small Industries Development Bank of India (SIDBI), Export Import Bank of India (EXIM Bank)

# DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

## FOUNDATION COURSE

(16CSAF1)

### COMPUTER FUNDAMENTALS

Total Marks: 50

External Marks: 40

Internal Marks: 10

**Time: 3Hrs.**

**Note:** Examiner will be required to set NINE questions in all. Question Number 1 will consist of total 8 parts (short-answer type questions) covering the entire syllabus and will carry 16 marks. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus and each question will carry 16 marks. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

#### Unit-I

**Historical Evolution of Computing Systems:** Overview of Data Processing, History of Computing, Computer Generations; Characteristics of Computer, Anatomy of Computer, Classification of Computers.

**Number Systems and Codes:** Introduction, Number Systems and its types, and inter-conversion of Number Systems; ASCII and EBCDIC codes.

**Input and Output Devices:** Concept of Input/Output, Types of Input Devices; Output Devices – Printers, Plotters and Monitors.

#### Unit-II

**Memory and Storage Devices:** Characteristics of memory systems, memory hierarchy, Types of Memory – RAM, ROM, etc.; Magnetic Disks, Magnetic Tapes, Optical Disks; Concept of Cache Memory and Virtual Memory.

**Software and Operating System Concepts:** Introduction, Software Types, Language translators, System Utility Software, Application Software; Operating System – Characteristics, its functions, and its classification; User Interfaces – CUI and GUIs. DOS and Windows operating systems.

#### Unit-III

**Working with Office Tools:**

**Using Word Processing:** Opening and Closing of documents, Text creation and Manipulation, Moving Around in a Document, Formatting of text, Table handling, Spell check, language setting and thesaurus, Handling Multiple Documents, Printing of word document.

**Using Spreadsheet tool:** Basics of Spreadsheet; Manipulation of cells, Formulas and Functions, Editing of Spread Sheet, Page setups, header and footer, printing of Spread Sheet.

**Using Slide Presentation Tool:** Basics of powerpoint, Preparation and Presentation of Slides, Slide Show, Formatting and Clip Arts, Taking printouts of presentation / handouts.

## Unit-IV

**Communication and Networks:** Data Communication, Transmission Modes, Basics of

Computer networks, types of computer network - LAN, MAN, WAN; Network Topologies and Applications of Computer Networks.

**Internet Basics:** Concept of Internet, Application of Internet, WWW, Web-sites and URLs, Search Engine, Using Electronic mails, Instant Messaging, Web Browsing software, Surfing the Internet.

**Social Concern:** Positive and Negative Impacts of Computer Technology, Computer Crimes, Computer Virus: Definition, Types of viruses, Characteristics of viruses, anti-virus software.

**Computer Applications:** Data Analysis, Sports, Research, Education, Business, Medicines & Health Care, Weather Forecasting, Military.

### Suggested Readings:

1. Nasib Singh Gill: Handbook of Computer Fundamentals, Khanna Books Publishing Co.(P) Ltd., New Delhi, 2016.
2. P.K Sinha: Computer Fundamentals, BPB Publications.
3. Nasib Singh Gill: Computing Fundamentals and Programming in C, Khanna Books Publishing Co.(P) Ltd., New Delhi.
4. V. Rajaraman: Fundamentals of Computers, PHI
5. Microsoft Office – Complete Reference – BPB Publication
6. Norton Peter: Introduction to Computer, McGraw-Hill.
7. Leon, Alexis & Leon, Mathews: Introduction to Computers, Leon Tech World.
8. C.S. French: Data Processing and Information Technology, BPB Publications.

**DEPARTMENT OF ENGLISH AND FOREIGN LANGUAGES**  
**FOUNDATION COURSES**  
**Odd Semester**

**Course Code: 16ENGF1**

**Nomenclature of the Course: Appreciation of Short Stories**

Total Marks: 50

External Marks: 40

Internal Marks: 10

Time: 3 hrs

Lectures 2

Total Credits: 2

**Prescribed Texts**

William Carlos Williams: "The Use of Force"

James Thurber: "The Catbird Seat"

Ernest Hemingway: "In Another Country"

John Henry Noyes Collier: "Wet Saturday"

Dylan Thomas: "The Enemies"

[**Prescribed Book:** Brooks, Cleanth, John Thibaut Purser, and Robert Penn Warren. *An*

*Approach to Literature*.5<sup>th</sup> ed.]

**Instructions to the Paper-Setter:**

In Question 1, students will be required to explain one passage, out of the two given, with reference to the context. 8

In Question 2, students will be required to answer any four questions, out of the given six, in about 150 words each. 4 x 3 = 12

Questions 3 and 4 will be essay type questions. Both these questions carry 10 marks each.

**Suggested Reading:**

Currie, Gregory. *Narratives and Narrators*.

Davis, Robert Marry. Ed. *The Novel: Modern Essays in Criticism*.

Dietrich, R.F. and Roger H. Sundell. *The Art of Fiction*.

Miller, J. Hillis. *On Literature*.

Nayar, Pramod. K. *Studying Literature: An Introduction to Fiction and poetry*.

Scholes, Robert, and H. Klaus and Michael Silverman. *Elements of Literature*.

**DEPARTMENT OF ENGLISH AND FOREIGN LANGUAGES**  
**FOUNDATION COURSES**  
**w. e. f. 2016-17 (Under CBCS)**  
**Odd Semester**

**Course Code: 16ENGF2**

**Nomenclature of the Course: Appreciation of Poetry and Prose**

Total Marks: 50

External Marks: 40

Internal Marks: 10

Time: 3 hrs

Lectures 2

Total Credits: 2

**Unit I**

**Poetry**

Wallace Stevens: "The Emperor of Ice-Cream"

Thomas Hardy: "Last Words to a Dumb Friend"

Ben Jonson: "To the Memory of my Beloved, the Author, Mr. William

William Shakespeare: "Sonnet 66"

Geoffrey Chaucer: "The Prioress" (From *The Prologue*)

Robert Browning: "My Last Duchess"

[**Prescribed Book:** *Inside Poetry* by James Reeves and Martin Seymour-Smith]

**Unit II**

**Essays**

Charles Lamb: "The Two Races of Men"

Virginia Woolf: "The Death of the Moth"

Frances Bacon: "Of Studies"

Joseph Addison: "Female Orators"

Samuel Johnson : "Singularities Censured" (*Adventurer No. 131. Tuesday, February 5, 1754.*)

[**Prescribed Book:** *Elements of Literature* by Robert Scholes, H. Klaus and Michael Silverman]

**Instructions to the Paper-Setter:**

In Question 1, students will be required to explain one passage with reference to the context.

There will be one passage from each Unit.

8

In Question 2, students will be required to answer any four questions in about 150 words each.

There will be three questions from each unit.

4 x 3 = 12

In Questions 3 and 4 based on Units I and II respectively, students will be required to attempt critical appreciations. Both these questions carry 10 marks each.

**DEPARTMENT OF ENGLISH AND FOREIGN LANGUAGES**  
**FOUNDATION COURSES**  
**Even Semester**

**Course Code: 16ENGF3**

**Nomenclature of the Course: Appreciation of Fiction**

Total Marks: 50

External Marks: 40

Internal Marks: 10

Time: 3 hrs

Prescribed Texts

Lectures 2

Total Credits: 2

**Unit I**

Leo Tolstoy: *The Death of Ivan Ilych.*

(**Prescribed Book:** Kennedy, X.J. *An Introduction to Fiction.* Harper Collins, 1991).

**Unit II**

D.H. Lawrence: *The Man Who Died*

(**Prescribed Book:** *Interpreting Literature* (Fifth Edition) H. by K.L. Knickerbocker and Willard Reninger, Hold, Rinehart and Winston, Inc.1974).

**Instructions to the Paper-Setter:**

In Question 1, students will be required to answer any five questions in about 150 words each.

There will be four questions from each unit.

5 x 4 = 20

In Questions 2 and 3 based on Units I and II respectively, students will be required to attempt critical appreciations. Both these questions carry 10 marks each.

**Suggested Reading:**

Currie, Gregory. *Narratives and Narrators.*

Davis, Robert Murray. Ed. *The Novel: Modern Essays in Criticism.*

Dietrich, R.F. and Roger H. Sundell. *The Art of Fiction.*

Hudson, W.H. *An Introduction to The Study of English Literature.*

Miller, J. Hillis. *On Literature.*

Nayar, Pramod. K. *Studying Literature: An Introduction to Fiction and Poetry.*

Scholes, Robert, and H. Klaus and Michael Silverman. *Elements of Literature.*

**DEPARTMENT OF ENGLISH AND FOREIGN LANGUAGES**  
**FOUNDATION COURSES**  
**Even Semester**

**Course Code: 16ENGF4**

**Nomenclature of the Course: Appreciation of Drama**

Total Marks: 50

External Marks: 40

Internal Marks: 10

Total Credits: 2

Time : 3 hrs

Prescribed Text

William Shakespeare: *The Tempest*

**Instructions to the Paper-Setter:**

In Question 1, students will be required to explain one passage, out of the two given, with reference to the context.

8

In Question 2, students will be required to answer any four questions, out of the given six, in about 150 words each.  $4 \times 3 = 12$

Questions 3 and 4 will be essay type questions. Both these questions carry 10 marks each.

Suggested Reading:

*Interpreting Literature* (Fifth Edition) by K.L. Knickerbocker and H. Willard Reninger, Hold, Rinehart and Winston.

Kennedy, X.J. *An Introduction to Fiction* by X. J. Kennedy.

*Viva Modern Critical Interpretations of Shakespeare's The Tempest*

**Foundation course run by Department of Genetics.  
(Foundation course)  
MORAL EDUCATION**

**PaperCode:16GENF1**

Total Marks: 50  
External Marks: 40  
Internal Marks: 10

**Time: 2.00 Hours**

**Instructions**

There will be a total of five questions. Question No. 1 will be compulsory and shall contain eight to ten short answer type questions without any internal choice and it shall cover the entire syllabus. The remaining four questions will include two questions from each unit. The students will be required to attempt one question from each unit. The students will attempt three questions in all.

**UNIT I**

**Guiding principles for life**

Ethics

- a. Guidelines set by society
- b. Changes according time and place

Morals

- c. Guidelines given by the conscience
- d. Always constant

**Ethics in the workplace**

- a. Respect for each other
- b. Obedience to the organization
- c. Dignity of labour
- d. Excellence in action

**UNIT II**

**Concept of Trusteeship**

- a. Everything belongs to society
- b. Man is only a caretaker
- c. Our responsibility to ensure welfare of all

**Importance of service**

- a. Responsibility of an individual
- b. Man is only a caretaker
- c. Our responsibility to ensure welfare of all



**MA Geography Semester-II**  
Foundation Course: 16GEOF1  
**GEOGRAPHY IN EVERYDAY LIFE**

**16GEOF1**

Total Marks: 50  
External Marks: 40  
Internal Marks: 10

**Learning Objectives**

With spatial turn in the other social sciences and humanities and cultural turn in geography the spatial structure has begun to be seen not merely as an arena in which social life unfolds but rather as a medium through which social relations are produced and reproduced. All this has strengthened geography as a multidisciplinary and interdisciplinary discipline. Geography deepens understanding of many contemporary issues and challenges - climate change, food security, energy choices – that cannot be understood without a geographical perspective. It serves vital educational goals: thinking and decision making with geography helps us to live our lives as knowledgeable citizens, aware of our own local communities in a global setting. What we need is a global sense of the local, a global sense of place.

**Learning Outcome**

On completion of the course a student should be able to understand how geography permeates each and every aspect that concerns our living on this earth. They would know how Geography can use its versatility and multi -factor approach, co-existence between physical and human aspects, construction of ideas around space which are politically and administratively relevant, to its best advantage.

**Unit I**

Geography and Environment; Geography and Social Sciences; Geography and Development; Geography and Planning

**Unit II**

Geography and Governance; Geography and Globalization; Geography and Disasters; Geography and Cartography

Note: (i) The question paper will have three units. First two units of question paper will contain two questions from each unit of the syllabus. Candidate(s) are required to attempt two questions in all selecting one from each unit. Unit III shall be compulsory and shall contain five short answer type questions covering entire syllabus in which candidates will be required to attempt any five out of eight questions. All questions carry equal marks.

(ii) Internal Assessment of 10 marks will be ‘Map Filling’ about the location of important places, landforms, and geographical features in India and the world. The unit three shall be compulsory and shall contain five short answer type questions covering entire syllabus.

## **Recommended Readings**

Daniels, Peter, Michael Bradshaw, Denis Shaw, and James Sidaway. 2012. An Introduction to Human Geography. 4<sup>th</sup> edition. Pearson Education Ltd. Harlow, England.

Herod, Andrew. 2009. Human Geography: the basics, Routledge, New York.

Hopper, Paul. 2012. Understanding Development: Issues and Debates, Polity Press. Cambridge, UK,.

Kant, Surya and Nina Singh ed. 2015. Geography Development Public Policy: Select Essays of Gopal Krishan. RK Books, New Delhi.

Kapur, Anu. 2010. Vulnerable India, Sage Publications, New Delhi.

Knox, Paul. 2014. Atlas of Cities. Princeton University Press.

Oxford Atlas of the World. 2015. 22<sup>nd</sup> edition. Oxford University Press.

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16HNDf1

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**18MHMCTF1**  
**Food of India**

**Course Code: 16MHMCTF1**

**Total Marks: 50**

External Marks: 40

Internal Marks: 10

Credits: 2-0-0

**Objective**

Main aim of the course is to make students familiar with the fascinating Indian cuisine. Students will learn about regional specialties of all corners of our country.

**Unit – 1**

Indian Food: Introduction, Key Features & Factors that affect eating habits in different parts of the country i.e. geographic location, historical background, available ingredients, equipments, staple foods. Essentials of Indian Food: Spices, Herbs etc.

Food of Northern India (Kashmir, Punjab, Haryana, Delhi, Himachal, Uttar Pradesh): Introduction, geographic location, historical background, available ingredients, equipments, staple foods & Regional specialties.

**Unit – 2**

Western India (Rajasthan, Gujarat, Maharashtra) & Madhya Pradesh: Introduction, geographic location, historical background, available ingredients, equipments, staple foods & Regional specialties.

**Unit – 3**

Food of Eastern India (West Bengal, Orissa, Bihar and North-Eastern States): Introduction, geographic location, historical background, available ingredients, equipments, staple foods & Regional specialties.

**Unit – 4**

Food of South India (Andhra Pradesh, Tamil Nadu, Karnataka & Kerala) & Goa: Introduction, geographic location, historical background, available ingredients, equipments, staple foods & Regional specialties.

**Practical**

- Students shall perform practicals in food production lab regarding regional specialties of India. The dishes will be decided by the concerned faculty member.

**Suggested Readings:**

- Theory of Cookery, Krishna Arora, Frank Bros. & Co.
- Food Production Operations: Parvinder S Bali, Oxford University Press
- Modern Cookery (Vol- I & II) By Philip E. Thangam, Publisher: Orient Longman
- Practical Cookery By Kinton & Cesarani
- Theory of Catering By Kinton & Cesarani
- Professional Chef: The Art of Fine Cooking by Arvind Saraswat
- Prashad by J Inder Singh & Pradeep D Gupta
- Dawaat by J Kalra

## 18MHMCTF2 FOOD AND DINING SERVICES

**Total Marks : 50**

**External Marks: 40**

**Internal Mars: 10**

**Credits: 2-0-0**

### **UNIT-1 Food Service Industry**

- Introduction and growth of the catering industry in India.
- Types of F&B operations.
- Classification of Commercial and Non-residential catering industry.
- Issues, challenges and current trends in catering industry.
- Careers in food service industry.

### **UNIT-2 Organization structure and Food service methods:**

- Organization structure of food service staff in different hotels
- Duties and responsibilities of food service staff
- Food Service Methods- Introduction, importance, types, sequence.
- Rules for laying of table and waiting.
- Brief overview of Beverages -Introduction, types, service and storage.
- Food and beverage order taking

### **UNIT 3 Food and beverage service equipments-**

- Flatware, Cutlery and Hollowware-Introduction, types, size, uses and storage.
- Glassware- Introduction, types, uses, full capacity, serving capacity and storage.
- Crockery - Introduction, types, size, uses and storage.
- Different types of restaurant linen
- Use of miscellaneous equipments like Baine Marie, plate warmer, hot plates, microwave oven, ice cream machine, coffee machine, ice cube machine, side boards, dish washing machine, glass washing machine. Nut cracker, grape scissors, Oyster service, caviar, lobsters, snails, cheese. Cigar cutters, wine bottle openers, gueridon equipment.

### **UNIT 4 Dining Etiquettes and Menu**

- Dining etiquettes- Introduction, importance and rules to follow when you are dining at a restaurant.
- Menu- Introduction and types.
- French classical menu- Brief Overview

## ENTREPRENEURSHIP DEVELOPMENT

Course Code: 16IMSF1

Total Marks: 50

External Marks: 40

Internal Marks: 10

### Course Objective:

This course aims to acquaint the students with challenges of starting new ventures and enable them to investigate, understand and internalize the process of setting up a business.

### Unit-I

Entrepreneurship: Concept, knowledge and skills requirement; characteristics of successful entrepreneurs; role of entrepreneurship in economic development; entrepreneurship process; factors impacting emergence of entrepreneurship

### Unit-II

Starting the venture: generating business idea – sources of new ideas, methods of generating ideas, opportunity recognition; environmental scanning, competitor and industry analysis; feasibility study – market feasibility, technical/operational feasibility, financial feasibility; drawing business plan

### Unit -III

Functional plans: marketing plan – marketing research for the new venture, steps in preparing marketing plan, contingency planning; organizational plan – form of ownership, designing organization structure; financial plan – cash budget, working capital

### Unit -IV

Sources of finance: debt or equity financing, commercial banks, venture capital; financial institutions supporting entrepreneurs; legal issues – intellectual property rights patents, trademarks, copyrights, trade secrets, licensing

### Suggested Readings:

1. Hisrich, Robert D., Michael Peters and Dean Shepherd, Entrepreneurship, Tata McGraw Hill, New Delhi
2. Barringer, Brace R., and R. Duane Ireland, Entrepreneurship, Pearson Prentice Hall, New Jersey (USA)
3. Lall, Madhurima, and Shikha Sahai, Entrepreneurship, Excel Books, New Delhi
4. Charantimath, Poornima, Entrepreneurship Development and Small Business
5. Pearson Education, New Delhi
6. Kuratko, Donand and Richard Hodgetts, Entrepreneurship, Cengage Learning India Pvt. Ltd., New Delhi

**Instructions for External Examiner:** The question paper shall be divided in two sections. **Section ‘A’** shall comprise of eight short answer type questions from whole of the syllabus carrying one mark each, which shall be compulsory. Answer to each question should not exceed 50 words normally. **Section ‘B’** shall comprise 8 questions (2 questions from each unit). The students will be required to attempt four questions selecting one question from each unit. All questions will carry equal marks

**COMMUNICATION AND SOFT SKILLS**  
**Course Code: 16IMSF2**

Total Marks: 50  
External Marks: 40  
Internal Marks: 10

Time Allowed: 3 Hours

**Course Objective:**

The objective of this course is to expose the students to basic communication and soft skills and to familiarize them with behavioral skills and business etiquettes.

**Unit -I**

Communication Skills - Concept, characteristics and process of communication; 7C's of communication; listening skills, verbal communication, non-verbal communication, body language, art of meeting and greeting, making effective conversation

**Unit -II**

Presentation Skills - Difference between speech and presentation, handling of presentation audience questions, holding meetings, group discussion and interviews; structuring a presentation, delivering the presentation; situational presentation

**Unit -III**

Behavioral Skills - Positive attitude, self-management, problem solving skills, time management skills, anger management, coping skills, assertiveness team building skills

**Unit -IV**

Business Etiquette - Business dress and grooming, office courtesies, etiquette for special occasions, meeting etiquette, dining etiquette

**Suggested Readings:**

1. Kaul, Asha, The Effective Presentation, Response Books, New Delhi
2. Fox, She, Business Etiquette for Dummies, Wiley Publishing inc.
3. Chaney, Lillian and Janette Martin, The Essential Guide to Business Etiquette, Praeger, London
4. Sanghi, Seema, Towards Personal Excellence, Response Books, New Delhi
5. Sherfield, Robert M, R J Montgomery and Patricia G Moody, Developing Soft Skills, Pearson Education, New Delhi
6. Chancy, Lillian and Janelte Martin, The Essential Guide to Business Etiquette, Praeger, Londonson Education, New Delhi

**Instructions for External Examiner:** The question paper shall be divided in two sections. **Section 'A'** shall comprise of eight short answer type questions from whole of the syllabus carrying two marks each, which shall be compulsory. Answer to each question should not exceed 50 words normally. **Section 'B'** shall comprise 8 questions (2 questions from each unit). The students will be required to attempt four questions selecting one question from each unit. All questions will carry equal marks.

**DEPT. OF JOURNALISM AND MASS COMMUNICATION**

**SEMESTER –II**

**Foundation Elective- Introduction to Mass Media**

**Time allowed: 3 Hours**

**Total Marks:50**

Theory Marks: 40

Internal Assessment: 10

Credit: 02

***Note: The question paper will be divided into Five Units carrying equal marks i.e. 08 marks for each question. Each of the First Four Units will contain two questions and the students shall be asked to attempt one question from each unit. Unit Five shall contain eight short answer type questions without any internal choice and it shall be covering the entire syllabus. As such, all questions in Unit five shall be compulsory.***

**Unit 1**

- 1.1 Mass Media: Definition, Meaning & Concept
- 1.2 Types of Mass Media
- 1.3 Traditional & Folk Media- Characteristic Features
- 1.4 Print Media, Electronic Media, New Media- Characteristic Features

**Unit 2**

- 2.1 Print Media- Brief History, Evolution from early times
- 2.2 Print Media in India- Role in freedom struggle, growth of print media after independence
- 2.3 Important newspapers and magazines of India, noted journalists; current role and Importance of print media
- 2.4 Emergence of Regional Print Media, Challenges before Print Media, Emerging trends of Print Media

**Unit 3**

- 3.1 Origin and Development of Radio in India; role and importance of radio as a medium
- 3.2 A.I.R, Private FM, Community Radio;, Current status of Radio in India
- 3.3 Origin and Development of Television in India
- 3.4 Public and Commercial Television; role and importance of Television as a medium; Present status of Television industry in India

**Unit 4**

- 4.1 Brief History and Development of Cinema in India
- 4. 2 Cinema as a medium if mass communication- role and importance; Emerging trends in Indian Cinema
- 4.3 New Media- salient features, social media, social sharing to social activism- new media as a medium of mass communication
- 4.4 Current status of New Media, especially Web Journalism; Emerging trends & challenges

**Internal Assessment**

**Total Marks : 10**

Note : The Break up of 10 marks for Internal Assessment (Theory Paper) is as under :

- |               |          |
|---------------|----------|
| 1. House Test | 05 Marks |
| 2. Assignment | 05 Marks |

**Internal Assessment**

**Total Marks : 20**

Note : The Break up of 20 marks for Internal Assessment (Theory Paper) is as under :

- |                         |          |
|-------------------------|----------|
| 1.House Test            | 10 Marks |
| 2.Class Attendance      | 05 Marks |
| 3.Term Paper/Assignment | 05 Marks |



**LL.M. SECOND SEMESTER EXAMINATION**  
(Media Law)  
**16LAWF1**

Total Marks: 50  
External Marks: 40  
Internal Marks: 10

Time Allowed: 3 Hours

The question paper of each course will be divided into two sections A & B, Section A consists of Eight Small answer type questions (without internal choice) carrying 3 marks each covering the entire syllabus. This section as such will be compulsory. Section-B shall again consist eight questions carrying 14 marks each covering the entire syllabus. However, the candidate shall be required to attempt any four questions from this section.

**NOTE FOR STUDENTS**

Attempt all questions in Section A and Four Questions from Section B. Each Question in Section A carries 3 marks and each question in Section B carries 14 marks.

**Unit: I.** Introduction: Evolution of Media; Types of media: Print, Electronic; E-Media free flow of Information beyond boundaries and barriers; Difference between Visual and non-Visual Media- impact on People

**Unit: II.** Freedom of Speech and Expression- Article 19 (1) (a): An Introduction to Freedom of expression; Evolution of Freedom of Press; Restrictions under Constitution: Article 19 (2), Government power to legislate- Article 246 read with the Seventh Schedule.; Power to impose Tax- licensing and licence fee; Advertisement & Ethics: Misleading Advertisement vis-à-vis Consumers rights.

**Unit: III.** Law of defamation and obscenity: Defamation; Libel, Slander; Obscenity; Sedition

**Unit: IV.** Development of laws relating to Mass Media via a vis International regime: Censorship of films; Censorship under Constitution; Censorship under the Cinematograph Act; Pre- censorship of films.

**Select Bibliography:**

- M.P. Jam, Constitutional Law of India (1994) Wadawa, Nagpur
- H.M. Seervai, Constitutional Law of India 2002 Vol. 1 Universal
- John B. Howard, "The Social Accountability of Public Enterprises" in Law and Community Controls in New Development Strategies (International Center for law in development 1980)
- Bruce Michael Boys, Film Censorship in India: A Reasonable Restriction on Freedom of Speech and Expression" 14 J.I.L.I 501 (1972)
- Rajiv Dhavan "On the Law of the Press in India" 26J.I.L.I 288(1984)
- Rajeev Dhavan "Legitimizing Government Rhetoric: Reflections on Some Aspects of the Second Press Commission" 26 J.I.L.I 391 (1976)
- Soli Sorabjee, Law of Press Censorship in India (1976)
- Justice E.S. Venkaramiah, Freedom of Press: Some Recent Trends (1984)
- D.D. Basu, The Law of Press of India (1980)

**Semester-2(Music)**  
**Appreciation of Indian Music**  
**16MUSF1**

Paper Code	Core	Nomenclature of Papers	Maximum Marks	Internal Assessment Marks	Total Marks	Credit
16MUSF1	Foundation Elective	Appreciation of Indian Music	40	10	50	2

**Structure of LTP**

Lecture	Tutorials	Practical
3	1	0

**Unit-I**

- The study of sound and concept of Naad/swar
- Brief history of Indian Music
- Study of Technical terms of Indian Music
- An introduction to Raga  
 Classification of Raga  
 Component/technical terms & structure of presentation of Raga

**Unit-II**

- Rhythm & Music  
 Laya & Taal
- Writing an essay of 1000 words on relationship between Music and the subject belongs to you
- Music therapy and its impact on human body
- Different kind of compositional forms and their evolution
- Understanding music through Rag Mala painting

**Department of Psychology**  
**PAPER- (16PSYF1)**

**Psychology for Everyday Living**

*Credits : 2 ( 2Credit Theory:2 hrs/week*

Total Marks: 50  
External Marks: 40  
Internal Marks: 10

Time Allowed: 3 Hours

**Note:**

- a) Nine questions would be set in all. Candidates would be required to attempt five questions.*
- b) There would be two questions (8 marks each) from each of the four Units. Candidates would attempt one question from each Unit.*
- c) Question No. IX would be compulsory. It shall be based on the entire syllabus and would contain eight short answer questions of one marks each*

**Unit I**

Science of Psychology: Definition, Goals, Basic and Applied areas of Psychology.

Self: Nature of self, Self-Regulation and Personal Growth.

**Unit II**

Intelligence: Definition; Theories: Theory of multiple intelligences, Triarchic theory, Emotional Intelligence.

Administration: Any one test of Intelligence/Emotional Intelligence.

**Unit III**

Personality: Definition; Theories: Trait and Type: Eysenck; Psychoanalytical: Freud; Humanistic: Maslow.

Administration: Any one objective test of Personality.

**Unit IV**

Stress and Coping: Nature of Stress; Sources; Stress reactions; Factors that influence reactions to stress.

Coping with stress: Modifying environment; Altering lifestyle.

**Recommended Books:**

Khatoon, N. (2012). General Psychology. Pearson: Delhi.

Baron, R.A. and Misra, G. (2016). Psychology. Pearson: Delhi.

Ciccarelli, S.K. and Meyer, G.E. (2006). Psychology. Pearson: Noida

## FOUNDATION ELECTIVE COURSE

### 16ECEF1 ELECTRONICS ENGINEERING

	Marks	Credits
Exams	: 40	2
Sessionals	: 10	
Total	: 50	2
Duration of Exam	: 3 hrs.	

**Instructions for setting of paper:** Nine questions are to be set in total. First question will be short answer question covering whole syllabus and will be compulsory to attempt. Next eight questions will comprise of two questions each from the four sections. Student will be required to attempt four more questions selecting one from each section. Each question will be of 8 marks

#### UNIT 1

**SEMICONDUCTOR DIODE :** P-N junction and its V-I Characteristics, P-N junction as a rectifier, Switching characteristics of Diode. Diode as a circuit element, the load-line concept, half -wave and full wave rectifiers, clipping circuits, clamping circuits, filter circuits, peak to peak detector and voltage multiplier circuits.

#### UNIT 2

**TRANSISTOR:** Bipolar junction transistor : operation, characteristics, Ebers-moll model of transistor, CE, CB, CC configurations.

**TRANSISTOR BIASING :** Operating point, bias stability, collector to base bias, self-bias, emitter bias, bias compensation, thermistor & sensistor compensation.

#### UNIT 3

**FIELD EFFECT TRANSISTORS:** Junction field effect transistor, pinch off voltage, volt-ampere characteristics, small signal model, MOSFET Enhancement & Depletion mode, V-MOSFET. Common source amplifier, source follower, biasing of FET, applications of FET as a voltage variable resistor (V V R).

#### UNIT 4

**DIGITAL ELECTRONICS:** Binary, Octal and Hexadecimal number system and conversions, Boolean Algebra, Truth tables of logic gates (AND, OR, NOT) NAND, NOR as universal gates, Difference between combinational circuits and sequential circuits, Introduction to flip-flops (S-R & J-K).

#### TEXT BOOK :

1.Integrated Electronics: Millman & Halkias ; McGrawHill

2.Modren Digital Electronics: R.P. Jain; McGraw-Hill

#### REFERENCE BOOKS:

1.Electronics Principles: Malvino ; McGrawHill

2.Electronics Circuits: Donald L. Schilling & Charles Belove ; McGrawHill

3.Electronics Devices & Circuits: Boylestad & Nashelsky ; Pearson.

**M.D.U., ROHTAK**  
**W.E.F. 2018-19**

**A) Open Elective Courses**

Students of all PG programmes under CBCS (w.e.f.2018-19) are required to study one open elective course in each of the 2<sup>nd</sup> and 3<sup>rd</sup> Semesters for 2-Years Programmes and in each of the 4<sup>th</sup> and 5<sup>th</sup> semesters for 3-Years Programmes. They may choose any one of the following courses (excluding the courses offered by the departments of their own subjects, if not stated otherwise).

**Open Elective Courses of 2<sup>nd</sup> Semester:-**

Sr. No.	Nomenclature of the course	Course Code	Offered by the Department
1.	Introduction to Bioinformatics	16BINO1	Bioinformatics
2.	Principles and Applications of Agriculture Biotechnology-I	16CBTO1	Biotechnology
3.	Principles and Applications of Biotechnology-I	16CBTO3	Biotechnology
4.	Basic Biochemistry	16BCHO1	Bio-Chemistry
5.	Plant Resource Utilization	16BOTO1	Botany
6.	Cyber Forensic & Security	16CSAO1	Computer Science & Applications
7.	National Security of India	16DSSO1	Defence & Strategic Studies
8.	Basics of Economics	16ECCO1	Economics
9.	Fundamental Aspects of Education	16EDUO1	Education
10.	Indian Literature in Translation - I	18ENGO1	English
11.	Environmental Issues	16ENVO1	Environmental Science
12.	Food Adulteration	16FTEO1	Food Technology
13.	Genetics & Society	16GENO1	Genetics
14.	Basics of Geoinformatics	16GEOO1	Geography
15.	Geography of India Systematic and Regional	16GEOO2	Geography
16.	Nationalism in India	16HISO1	History
17.	Front Office & Guest Services Management	18MHMCTO1	IHTM
18.	Fundamentals of Management	16IMSO1	IMSAR
19.	Media & Society	16JRMO1	Journalism
20.	Family Law	16LAWO1	Law
21.	General Principles of Criminal Law	18LAWO2	Law
22.	Academic Integrity & Plagiarism	16LISO1	Library & Information Science
23.	Mathematical Techniques and Applications	16MATO1	Mathematics
24.	Parametric & Non-Parametric Tests	16MATO2	Mathematics
25.	Principles of Medical Biotechnology I	16MBTO1	Medical Biotechnology
26.	Microbes and Environment	18MCBO1	Microbiology

27.	Sources of Energy-I	16PHYO1	Physics
28.	Administrative Literacy	16PUBO1	Public Administration
29.	Disaster Management - I	16POLO1	Political Science
30.	Ancient Indian Culture & Philosophy	18SKTO1	Sanskrit
31.	Understanding Sociology	16SOCO1	Sociology
32.	Quantitative Techniques	16STAO1	Statistics
33.	Sampling & Estimation Techniques	16STAO2	Statistics
34.	Computer Science Principles	16CSEO1	UIET (Comp. Sc. & Eng.)
35.	Software Engineering Practices	16CSEO2	UIET (Comp. Sc. & Eng.)
36.	Business skills for Biotechnologists	16MBTO1	UIET (Biotech)
37.	Operations Research	16MMEO1	UIET (Mech. Eng.)
38.	Multimedia Communication	16ECEO1	UIET(Electronics & Comm
39.	Applied Zoology	16ZOOO1	Zoology

# CENTRE FOR BIOINFORMATICS

## M. D. UNIVERSITY, ROHTAK

CBCS-SCHEME OF EXAMINATION (M.Sc. -Bioinformatics)-2016-17 onwards

**Course Title: Introduction to Bioinformatics**

**Credit: 3 0 0**

**Course Code: 16BINO1**

**MM. Th 80+ IA 20**

**Time: 3 Hours**

Note: In all 7 questions are to be set, Question No. 1 is compulsory and to be set covering entire Syllabus. 6 questions will be set with two questions from each unit. Students are required to attempt one compulsory question and 4 other questions, *i.e.*, selecting atleast one from each unit.

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### UNIT I

**Overview of Bioinformatics and Information technology:** History, scope and application, Internet and World Wide Web; Generation of computers; Concept of networking; Internet protocols – OSI model; TCP/IP models.

### UNIT II

**Bioinformatics resources:** Biological databases, Basic classification – Sequence & Structure; Generalized & Specialized; Primary & Secondary, with example databases .

**Omics science:** Introduction to genomics, proteomics, metabolomics, interactomics.

### UNIT III

**Bioinformatics tools:** Information retrieval system (Entrez, SRS); Sequence alignment tools (BLAST, FASTA, CLUSTAL-W/X, MUSCLE, TCOFFEE), Variants of BLAST (BLASTn, BLASTp, PSI-BLAST, PHI-BLAST, etc).

**M.Sc Agriculture Biotechnology**

**Semester-II**

**Course Title: Principles and Applications of Agriculture Biotechnology-I**

**MM. Th 80+IA 20**

**Time: 2 h**

**Course Code No. 16CBTO1**

NOTE: There shall be seven questions in total. Question No.1 will be compulsory (short answer type) covering the entire syllabus and remaining six questions will be set two from each unit. Students are required to attempt four questions in all by selecting at least one from each unit.

**Theory**

### **UNIT I**

Tools and techniques used in agriculture biotechnology, restriction digestion (restriction endonucleases, types and mechanism), ligases, alkaline phosphatases, polynucleotide kinase, SI nuclease, DNase, RNase, scoreable and selectable markers. PCR, C-DNA and genomic libraries.

### **UNIT II**

Plant tissue culture and its application in crop improvement. Recombinant DNA technology and cloning vectors, Different methods of gene transfer in plants (*Agrobacterium* mediated transfers, microinjection, eletroporation, somatic cell hybridization).

### **UNIT III**

Genetic and Molecular basis of Heterosis and Apomixis and their significance, Mutations and polyploidy in crop improvement, Molecular markers, Marker assisted breeding, QTL mapping, Origin, evolution and cultivation practices of the major crop plants. Improvement of crop plants: increase in iron, protein and amino acids, golden rice colours – anthocyanins, betalaines, crocin and crocetin. Flavours–capsaicin, vanillin, stevioside, thaumatin. Developing vaccine and plantibodies, terminator technology and male sterility

### **Suggested readings:**

1. Hou CT, Shaw JF (2009) – Biocatalysis and agricultural biotechnology, CRC Press, USA
2. Agricultural biotechnology, 1st edition, (2008) Rawat H, Oxford Book Co, India.
3. Agrobiotechnology and plant tissue culture, Bhojwani SS, Soh WY, Oxford & IBH Publ, India
4. Agricultural biotechnology, (2005), Kumar HD, Daya Publ House, India
5. Plant molecular breeding, (2009), Newbury HJ, John Wiley and Sons., USA.
6. Embryology of Angiosperms, (2009), S.S. Bhojwani and S.P. Bhatnagar, Vikas Publ House, India.
7. Ashwani Kumar, Shekhawat NS (2009) – Plant tissue culture and molecular markers: their role in improving crop productivity (IK International)
8. Biotechnology, 4th edition, (2010), H K Das, Wiley India Pvt. Limited, India
8. Biotechnology, 4th edition, (2010), H K Das, Wiley India Pvt. Limited, India



**M.Sc Biotechnology**

**Semester-II**

**Course Title: Principles and Applications of Biotechnology-I**

**MM. Th 80+IA20**

**Time: 2 h**

**Course Code No. 16CBTO3**

**NOTE:** There shall be seven questions in total. Question No.1 will be compulsory (short answer type) covering the entire syllabus and remaining six questions will be set two from each unit. Students are required to attempt four questions in all by selecting at least one from each unit.

#### **UNIT I**

Molecular cloning tools; Restriction modification systems: Types I, II and III. Mode of action and nomenclature, DNA modifying enzymes and their applications: DNA polymerases, DNA phosphatases, and DNA ligases; Cloning Vectors: Definition and Properties, Plasmid vectors: pBR and pUC series; Bacteriophage lambda and M13 based vectors, Cosmids, BACs, YACs, linkers and adaptors.

#### **UNIT II**

Protein expression vectors: *E. coli* lac and T7 promoter based vectors, yeast YIp, YEp and YCp vectors, Baculovirus based vectors, mammalian SV40 based expression vectors, Methods in Molecular Cloning, Transformation of DNA: Chemical method & Electroporation; Gene delivery: Microinjection, electroporation, biolistic method (gene gun), liposome and viral mediated delivery, Agrobacterium mediated delivery, in vitro culture of plant and animal cells

#### **UNIT III**

DNA Amplification and DNA sequencing; PCR, RT-PCR, Sanger's method of DNA Sequencing: traditional and automated sequencing, Introduction to next generation sequencing, Chromosome walking & jumping, shotgun sequencing. Preparation, uses and screening of Genomic and cDNA libraries; Colony hybridization and colony PCR applications of Recombinant DNA Technology; Products of recombinant DNA technology: Products of human therapeutic interest-insulin, antisense molecules, Applications of recombinant DNA in crop improvement, Gene therapy, Recombinant vaccines, Protein engineering, Site directed mutagenesis and Biosensor technology

#### **Suggested readings:**

1. Brown, TA (2010) Gene Cloning and DNA Analysis: An Introduction, Sixth Edition. A John Wiley & Sons, Ltd., Publication, Germany.
2. Clark DP, Pazdernik NJ (2009) Biotechnology: Applying the Genetic Revolution. Elsevier Academic Press, USA.
3. Primrose SB, Twyman RM (2006) Principles of Gene Manipulation and Genomics, 7<sup>th</sup> Edition. Blackwell Publishing, Oxford, U.K.
4. Wiley JM, Sherwood LM, Woolveron CJ (2008) Prescott, Harley and Klein's Microbiology. McGraw Hill Higher Education.
5. Primrose SB and Twyman RM (2008) Genomics: Applications in human biology. Blackwell Publishing, Oxford, U.K.

## Open Elective papers offered by Department of Biochemistry

### **16BCHO1: Basic Biochemistry**

**Note:** Question 1 will be compulsory and will cover the entire syllabus in the form of short questions. Question 2 to 7 will include three questions from each unit and candidate will have to attempt two questions from each unit. Overall, three questions to be attempted. All questions to carry equal marks(16).

### **MM. Th 80+IA 20**

#### **UNIT I:**

*Cell:* definition, general structure and size of some important cells, general functions of cell organelles, basic difference in prokaryotic and eukaryotic cells

*Carbohydrates:* Definition, classifications and sources of carbohydrates, occurrence and biological functions of monosaccharides, disaccharides, and polysaccharides

*Lipids:* Introduction, classification and functions of lipids. Saturated and unsaturated fatty acids. Essential fatty acids. Triacylglycerides and their properties,

*Amino acids:* Nutritional classification of amino acids and physical properties of amino acids.

*Proteins:* Definition, types, sources, properties and biological significance of proteins, Primary, secondary, tertiary and quaternary structure of proteins.

#### **UNIT 2:**

*Nucleic acids:* Nucleotides & nucleosides, types of DNA and RNA, evidence that DNA is the genetic material, feature of DNA double helix, Size of DNA in prokaryotic and eukaryotic cells.

*Vitamins:* Sources, examples and classification, important functions of fat soluble and water soluble vitamins

*Enzymes:* History, general characteristics, nomenclature and IUB classification of enzymes, holoenzyme, apoenzyme, coenzymes, prosthetic groups, cofactors, activators, inhibitors, active site, metalloenzymes and isozymes, Units of enzyme activity, examples of some clinically important enzymes

*Factors affecting enzyme activity:* pH, temperature, time of incubation, enzyme concentration and substrate concentration. Properties of allosteric enzymes and their significance.

**Suggested Readings for 16BCHO1: Basic Biochemistry:**

1. Lehninger Principles of Biochemistry 4<sup>th</sup> Ed **By** David L. Nelson and Michael M. Cox, WH Freeman and Company.
2. Principles of Biochemistry **By** Geoffrey Zubay. Publisher: McGraw Hill College.
3. Biochemistry: The Molecular Basis of Life **By** Trudy McKee and James R McKee. Publisher: McGraw-Hill Higher education.
4. Biochemistry: Biomolecules, Mechanisms of Enzyme Action and Metabolism Vol 1 **By** D Voet. John Wiley and Sons.
5. Biochemistry **By** U. S. Satyanarayana
6. Outlines of Biochemistry **By** Eric C Conn, PK Stumpf, G Bruening and Ray H. Doi. John Wiley & Sons.

## DEPARTMENT OF BOTANY

### Open Elective Paper: Plant Resource Utilization Semester-II: Paper Code: 16BOTO1

MM. Th 80+IA 20  
Time: 3 hrs.

Note: The examiner is required to set even questions in all. Question No. 1 will be compulsory and short answer type covering the entire syllabus. The remaining six questions will be set with two questions from each unit. The candidate will be required to attempt Question 1 and four more selecting at-least one from each unit.

#### UNIT-I

Origin of Agriculture, World Centres of Primary diversity of domesticated plants: Plant Introductions and Secondary Centres.

Botany, Cultivation, Harvesting and uses of Wheat and Rice.

Botany, Cultivation and uses of following fruits and vegetables: Mango, Apple, Banana, Potato, Alliums, Cabbage, Spinach and Tomato

#### UNIT-II

**General Account of the Spices:** Ginger, Turmeric, Cinnamon, Clove,

**Beverage Plants:** Source and general account of Tea and Coffee.

**Legumes:** Origin, Botany, Cultivation and uses of Pigeon pea, Chick pea, Cluster bean

**Medicinal Plants:** Plants as sources of drugs, parts used and uses.

**Fibres:** Types of fibres - Soft fibres, Hard fibres, Surface fibres, Brush fibres and Braiding fibres.

#### UNIT-III

**Gums:** Important commercial gums and their uses.

**Tannins and Dyes:** Sources and their uses.

**Vegetable Oils and Fats:** Distinction between fatty and essential oils. Drying (Soyabean and linseed), nondrying (Groundnut and Mustard oil) and Semi drying (cottonseed and Sunflower oil) oils and their uses.

**Wood and its Uses:** Soft woods and hard woods, wood as fuel, construction material Genetic Resources and their conservation.

#### SUGGESTED READINGS

1. Anonymous. *National Gene Bank*: Indian Heritage on Plant Genetic resources (Booklet). National Bureau of Plant Genetic Resource, New Delhi. 1997.
2. Copley, L.S. and W.M. Steels. *An Introduction to the Botany of Tropical Crop*

- Plants.3rd Ed.* The English Language Book Society and Longman, London. 1979.
3. Bole, P.V. and Y. Vaghani. *Filed Guide to Common Indian Trees*. Oxford University Press, Mumbai. 1991.
  4. Chandel, K.P.S., G. Shukla and N. Sharma. *Biodiversity in Medicinal and Aromatic Plants in India: Conservation and Utilization*. National Bureau of Plant Genetic Resources, New Delhi. 1996.
  5. Conway, G. and V.W.Rattan. *The Doubly Green Revolution. Food for all in the 21st Century*. Cornell Univ. Press. 1999.
  6. Dastur, J.F. *Medicinal Plants of India and Pakistan*.3rd Ed. Meyerbooks. 1985.
  7. Hill, A.F. *Economic Botany*. McGraw Hill Book Co. Inc., New York. 1986.
  8. Kirtikar, K.R. & D.D. Basu. *Indian Medicinal Plants*. Vols. I & II. 2nd Ed. Lalit Mohan Basu, Allahabad. 1953.
  9. Kochhar, S.L. *Economic Botany of the Tropics*.2nd Ed. MacMillan India Ltd., Delhi.
    10. Leonard, W.H. & J.H. Martin. *Cereal Crops*. MacMillan Co., New York, USA. 824 pp. 1963.

**DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS**  
**OPEN ELECTIVE COURSE**

**CYBER FORENSIC AND SECURITY**

Paper Code: 16CSAO1

**MM. Th 80+IA 20**

**Time: 3Hrs.**

**Note:** Examiner will be required to set NINE questions in all. Question Number 1 will consist of total 8 parts (short-answer type questions) covering the entire syllabus and will carry 16 marks. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus and each question will carry 16 marks. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

**UNIT-1**

**Introduction to Information Systems:** Types of information Systems, Introduction to information security, Need for Information security, Threats to Information Systems, Information Security Investigations.

Security threats - Sources of security threats- Motives - Target Assets and vulnerabilities – Consequences of threats- E-mail threats - Web-threats - Intruders and Hackers, Insider threats, Security Threats to E-Commerce, Cyber-crimes.

**UNIT-2**

**Cyber Forensics:** Cyber Security, Cyber Security roles, Cyber Security Principles, Difference between information Security and Cyber Security, Types of Computer Forensics Technology, Types of Military Computer Forensic Technology, Types of Law Enforcement: Computer Forensic Technology, Types of Business Computer Forensic Technology, Specialized Forensics Techniques, Hidden Data and How to Find It, Spyware and Adware, Encryption Methods and Vulnerabilities, Protecting Data from Being Compromised Internet Tracing Methods, Security and Wireless Technologies, Avoiding Pitfalls with Firewalls Biometric Security Systems

**UNIT-3**

**Ethical Hacking:** Essential Terminology, Hacking windows – Network hacking – Web hacking – Password hacking, Malware, Scanning, Cracking. Digital Evidence in Criminal Investigations: The Analog and Digital World, Training and Education in digital evidence, Evidence Collection and Data Seizure: Why Collect Evidence, Collection Options Obstacles, Types of Evidence, The Rules of Evidence, Volatile Evidence, General Procedure, Collection and Archiving, Methods of Collection, Artifacts, Collection Steps, Controlling Contamination: The Chain of Custody, Reconstructing the Attack, The digital crime scene, Investigating Cybercrime, Duties Support Functions and Competencies.

**UNIT-4**

**Cyber Crimes and Cyber Security Standards:** Crime incident Handling Basics: Cyber activism, Tracking hackers, clues to cyber-crime, privacy act, search warrants, common terms, organizational roles, procedure for responding to incidents, reporting procedures, legal considerations, Information Technology Act 2000: Scope, jurisdiction, offense and

contraventions, powers of police, adjudication, Intellectual property issues in cyberspace, ISO, Copyright Act, Patent Law, Cyber Laws in India.

**Reference Books:**

1. V.K. Pachghare, "Cryptography and Information Security", PHI Learning Private Limited, India.
2. William Stallings and Lawrie Brown, "Computer Security: Principles and Practice", Prentice Hall.
3. Swiderski, Frank and Syndex, "Threat Modeling", Microsoft Press.
4. John W. Rittinghouse, William M. Hancock, "Cyber Security Operations Handbook", ElsevierPub.
5. Deborah G Johnson, "Computer Ethics", 4<sup>th</sup> Edition, Pearson Education Publication.
6. Earnest A. Kallman, J.P Grillo, "Ethical Decision making and IT: An Introduction with Cases", McGraw Hill Publication.
7. Dr. Surya Prakash Tripathi, RitendraGoyal, Praveen Kumar Shukla, "Introduction to Information Security and Cyber Law", WilleyDreamtech Press.
8. Kenneth J. Knapp, "Cyber Security and Global Information Assurance: Threat Analysis and Response Solutions", IGI Global.
9. Cahnder, Harish, "Cyber Laws and Its Protection", PHI Learning Private Limited, Delhi, India
10. Michael E. Whitman, Herbert J. Mattord, "Principles of Information Security", Cengage Learning Pub.
11. Charles P. Pfleeger, Shari LawerancePfleeger, "Analysing Computer Security", Pearson Education India.
12. Joseph M Kizza, "Computer Network Security", Springer Verlag.

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**OPEN ELECTIVE OFFERED BY THE DEPARTMENT  
Of  
Defence and Strategic Studies**

**SEMESTER-II**

**PAPER CODE-16DSSO1  
NATIONAL SECURITY OF INDIA**

**Maximum Marks: 100**

**Credits: 3:0:0**

**Theory Marks: 80**

**Time Allowed: 3 Hours**

**Internal Assessment Marks: 20**

**INSTRUCTION FOR THE PAPER SETTERS**

The Paper-Setters/Examiners will have to set Eight Question, selecting two from each out of Unit-I,II, III and IV. And one question consisting of Ten short answer type questions, without it any internal choice covering the entire syllabus be set in Unit V of the question Paper.

The Question Paper will consist of five units: I, II, III, IV and V. Unit-V will be compulsory. The first Four Units will contain two questions each from the respective syllabus and each question will carry 15 marks. Unit V of the question and will contain Ten short answer type question, with any internal choice and will cover the entire syllabus uniformly. Each short answer type question will carry Two marks. The Question Paper should be set strictly according to the syllabus. Separate marks for each question. Should be indicated in the question papers.

**UNIT-I**

1. **National Security Concepts:-**
  - a) **Definition of National Security, National Defence and National Interest.**
  - b) **Elements of National Security.**

**UNIT-II**

2. **National Security Structure:-**
  - a) **National Security Council and Cabinet Committee on Security affairs.**
  - b) **Armed Forces, Para-Military Forces.**

**UNIT-III**



**3. Threats to Indian Security:-**

- a) **Internal – Threats**
- b) **External – Threats**

**UNIT-IV**

**4. India and Its Neighbours:-**

- a) **India's Geo-Strategic Location**
- b) **India's Relations with its neighbours**

**Books Recommended**

1. Howard, Michael, "Theory and Practice of War"
2. Howard, Michael, "The Causes of War"
3. Bernard Black, L, "War and Its Causes"
4. Wright, Quincy, "A Study of War"
5. Mao-Tse-Tung, "Guerilla Warfare"
6. Legueur Walter, "Guerilla Warfare"
7. Robert E. Osgood, "Limited War – The Challenges to American Strategy".
8. Rees David, "Korea, the limited War"
9. Kitson Frank, "Low Intensity Operations, Subversion Insurgency, Peace keeping"
10. Osanka F.M., "Modern Guerilla Warfare"
11. Nasution, Abdul H., "Fundamentals of Guerilla Warfare"
12. Brodie, Bernard, "Strategy in the Missile Age"
13. Sampooran Singh, "India and the Nuclear Bomb"
14. Tirpathi, K.S., "Evolution of Nuclear Strategy"

- 15. Gupta, Rakesh, "Militarisation of outer-space"**
- 16. Encyclopedia Britannica**
- 17. Halperin Morton H., "Defence Strategies for the seventies"**
- 18. Mir Publications, "Weaponary in Space, The Dilemma of Society"**

**MA (Economics)**  
**Semester-II**  
**16ECOO1 - Basics of Economics (Open Elective Paper)**

**Max. Marks: 100**  
**Time: 3 Hrs.**

**Written Exam:80**  
**Internal Assessment: 20**

**Unit -1**

What is an Economy? Control problems of an Economy: What, how and for whom to produce, concept of production possibility function and opportunity cost.

**Unit-II**

Consumer's equilibrium – meaning of utility, marginal utility, conditions of consumer's equilibrium.

**Unit-III**

Demand, market demand, determinants of demand, demand schedule, price elasticity of demand, factors effecting price elasticity of demand.

**Unit-IV**

Cost and Revenue: Total cost, Total fixed cost, Total variable cost.  
Average cost: Average fixed cost, average variable cost Revenue- Total revenue and marginal revenue,-meaning their relationship

**Note:**

- (A) Nine questions would be set in all.
- (B) Question No. 1 based on the entire syllabus, would be compulsory. It would contain eight short answer questions of two marks each.
- (C) There would be two questions (16 marks each) from each of four units.
- (D) Candidates would be required to attend five questions ( one compulsory and selecting one from each unit).

**Reading List:**

- D.N. Divedi: Principles of Economics, 2<sup>nd</sup> Edition, Vikas Publication House.
- R Dutta and K P M Sundaram: Indian Economy, S Chand
- A.N.Agarwal: Indian Economy, Problems of Development and Planning, New Age.
- Mishra and Puri: Indian Economy, Himalaya.

**OPEN ELECTIVE - I (FUNDAMENTAL ASPECTS OF EDUCATION)**

**16EDU01**

**Time: 3 Hours**

**Max. Marks: 100**

**Credits: 03**

**(Theory: 80, Internal: 20)**

**NOTE FOR PAPER SETTER**

- I Paper setter will set 9 questions in all, out of which student will be required to attempt 5 questions
- II Q. No. 1 will be compulsory and will carry 16 marks. It will comprise of 4 short answer type questions of 4 marks each to be selected from the entire syllabus.
- III Two long answer type questions will be set from each of four units, out of which the students will be required to attempt one question from each unit. Long answer questions will carry 16 marks each.
- IV All questions carry equal marks

**COURSE OBJECTIVES:**

After completing the course, the students will be able to:

- understand nature and functions of education and philosophy and their relationship
- explain the meaning, types and scope of educational technology
- acquaint the learner with the process of development and assessment and its implication in teaching learning process
- develop an understanding of different stages of growth and development.
- understand the concept of educational sociology and sociology of education.
- acquaint students with the basics of social organization and its concept.
- develop an understanding of different factors influencing social organization-folkways, mores, institutions; values.

**COURSE CONTENTS**

**UNIT – I**

**Education and Philosophy**

- Concept of Education and Philosophy.
- Nature of Education and Philosophy.
- Relationship of Education and Philosophy.
- Need of Philosophical Foundations of Education.
- Branches of Philosophy; Metaphysics, Epistemology and Axiology, their implications for Education; Philosophical redirection of educational research in recent times.

**UNIT-II**

**Educational Technology.** Meaning, Nature, Approaches, Types, Scope And Significance Of Educational Technology

Programmed Instruction: Concept, Principles and Styles of Programmed Instruction  
Development of Programmed Instructional Material.

ICT In Education; Computer Assisted Instruction, Computer Managed Learning And Process of development of Computer based instructional material, Web Integrated Learning.

E-Learning and Virtual classrooms.

### UNIT-III

#### **Developmental Aspects of the Learner**

Educational Psychology: Concept and scope  
Concept of Teaching and learning  
Role of Educational Psychology in the Teaching –learning process  
Concept of Growth and development and principles' of development and its implications to teaching and learning process.  
Genetic epistemology of Jean Piaget.  
Motivation: Need, types and how can a teacher motivate students for learning.  
Factors affecting Learning.

### UNIT – IV

#### **Concept of Educational Sociology and Sociology of Education**

Social organization and its concepts.  
Factor influencing social organization-folkways, mores, institutions; values.  
Dynamic characteristics of social organization and its educational implications.  
Education as an investment.  
Brain drain: Concept, factors responsible for Brain drain, how to check brain drain from our country.

#### **Suggested Readings:**

- Andrews, T.W. (1961).Methods in Psychology, New York: John Wiley and Sons, Inc.  
Baller, Warren R., Don, C.(1962). The Psychology of Human Growth and Development, New York: Holt, Rinehart and Winston.  
Banerjee A.C. & Sharma S.R. (1999) : Sociological and Philosophical issues in Education, Jaipur : Book Enclave.  
Bhushan, A & Ahuja, M. (1992), Educational Technology, Meerut : Vikas Publication.  
Bloom, B.S. (1972), Taxonomy of Educational Objectives. A Hand Book- I (Cognitive Domain), New York: Devid Mokeay Campo.  
Chauhan S.S.(1978), A Textbook of Programmed Instruction, New Delhi : Sterling Publishers.  
Das, R.C.(1993), Educational Technology: A Basic Text, New Delhi: Sterling Publishers.  
Dave, R.H (1969). Taxonomy of educational objectives and achievement testing; development of educational testing vol. 1. London: University of London Press.  
Mangal. S.K. (2009). Essentials of Educational Technology. New Delhi: Prentice Hall of India pvt. Ltd.  
Sharma, Hemant Lata (2014). Innovative inputs in ICT. Jalandhar: Amit Prakashan.  
Sharma, Hemant Lata & Sharma, Savita (2010). Learning to Learn With Love : Theory and Practices of Co-operative Learning, New Delhi : Gagandeep Publication.  
Pnadey, K.P.(1983). Perspective in Social Foundation of Education, Amitash Prakashan, Ghaziabad.  
Kamat, A.R.,(1985).Education and Social Change in India, Samaiya Publishing Co., Bombay.  
Maunheim, K.et al.,(1962). An Introduction to Sociology of Education. Routledge and Kegam Paul,London.  
Mossish , Loor., (1972). Sociology of Education: An introduction, George Allen and Unwin, Londo  
Walia J.A., (2011): Philosophical, Sociological and Economic Bases of Education, Jalandhar: Ahim Paul Publishers

DEPARTMENT OF ENGLISH AND FOREIGN LANGUAGES

Semester II

Code: 18ENGO1

**OPEN ELECTIVE COURSE -I**

Nomenclature of the Course: Indian Literature in Translation - I

Total Marks: 100

External Marks: 80

Internal Marks: 20

Time : 3 hrs

Lectures 3 Tutorials 0

Total Credits: 3

**Learning Objectives:**

- To familiarise the students with contemporary Indian narratives written in regional languages

**Learning Outcomes:**

- Ability to comprehend and appreciate Indian literature with professional competence
- Humanizing the academic programmes of other disciplines particularly programmes offered by science departments

**Unit I**

Amrita Pritam: *Pinjar* (from *Pinjar: The Skeleton and Other Stories* trans. and adapted Khushwant Singh)

**Unit II**

[Indira Goswami](#): *The Blue-Necked God* (trans. Gayatri Bhattacharya)

**Unit III**

[Shrilal Shukla](#): *Raag Darbari* (trans. [Gillian Wright](#))

**Instructions to the Paper-Setter and the students:**

All questions are compulsory and carry equal marks.

Question 1 will comprise six short-answer type questions. There will be two questions from each Unit.

Students will be required to attempt any four (in about 200 words each) selecting at least one from each Unit.

Questions 2, 3 and 4 (with internal choice) will be long answer-type questions based on Units I, II, and III respectively.

**The paper-setter will mention Units.**

**Suggested Reading:**

Baker, Mona and Gabriela Saldanha, eds. *Routledge Encyclopedia of Translation Studies*.

Baker, Mona, ed. *Critical Readings in Translation Studies*.

---. *In Other Words: A Course Book on Translation*.

Gentzler, Edwin. *Contemporary Translation Theories*.

George, Rosemary Marangoly. *Indian English and the Fiction of National Literature*.

Gupta, Akhil. *Red Tape: Bureaucracy, Structural Violence, and Poverty in India*.

Mukherjee, Sujit. ed. *Translation as Recovery*.

---. *Translation as Discovery and Other Essays: On Indian Literature in English Translation*.

Rao, V. Pala Prasada, K. Nirupa Rani, Digumarti Bhaskara Rao. *India-Pakistan: Partition Perspectives in Indo-English Novels*.

Roy, Anjali Gera and Nandi Bhatia. *Partitioned Lives: Narratives of Home, Displacement, And Resettlement*.

Saint, Tarun K. *Witnessing Partition: Memory, History, Fiction*.

Subramanian, Shreerekha. *Women Writing Violence: The Novel and Radical Feminist Imaginaries*.

Tiwari, Shubha. *Indian Fiction in English Translation*.

## Semester –II

### Open Elective

#### 16ENVO1: Environmental Issues

MM. Th 80+IA 20

Time : 3 Hours.

**Note:** 1. Seven questions will be set in all.

2. Question No. 1 will be objective covering the entire syllabus & compulsory. The remaining six questions will be set with two questions from each unit. The candidate will be required to attempt five in total, Question I and four by selecting at least one from each unit.

#### Unit-1

Global Environmental Issues: Green House effect – causes and associated hazards, Ozone layer depletion – causes and associated hazards, Deforestation, Human Population Growth. Environmental problems associated with urbanization, industrialization, modernization of agriculture

#### Unit-2

Regional Environmental Issues: Forest and Wildlife management, desertification, reclamation of degraded land; Human intervention on wetlands, siltation and eutrophication, reclamation of wetlands, Mining and Environment, Open cast mining, Oil exploration and transportation, Deforestation and their impact on environment.

#### Unit-3

Pollution: Air Pollution : Causes of air pollution, Some important pollutants of air (CO, SO<sub>x</sub>, NO<sub>x</sub> and HC and Particulates) – their sources and effects on living and non-living organisms. Water Pollution: Sources of pollution of surface and ground water, Types of water pollutants. Solid Waste – Sources, characterization, disposal and management. Soil Pollution sources of soil pollution, Pollution and residual toxicity from the application of insecticides, pesticides and fertilizers; Soil erosion.

#### List of Recommended Books

1. Fundamentals of Environmental Science: G. S. Dhaliwal, G. S. Sangha and P. K. Raina, Kalyani Publication
2. Environmental Chemistry : A. K. De
3. Environmental Chemistry : B.K. Sharma, and H. Kaur
4. Fundamentals of Ecology : E. P. Odum
5. Environmental Science (6th ed) (1997): Jr. G. T. Miller, Wadsworth Pub. Co.



## Food Adulteration

PAPER CODE: 16FTEO1

**There will be seven questions in all. The first question will be compulsory and short answer type covering the entire syllabus. The remaining six questions will be set with two questions from each unit. The candidate will be required to attempt question 1 and four more selecting atleast one from each unit. MM. Th 80+IA 20**

**Time: 3h**

### Unit I

Basic food groups, Function of foods and its general composition.

Food Quality & Safety, various aspects of food quality & safety, challenges of food safety.

Food adulteration and contamination, common food contaminants & adulterants

### Unit II

**Food Adulteration:** Nature of adulterants, methods of evaluation of food adulterants and toxic constituents in foods, common food adulterants & their detection on various foods like

- a) Milk and Milk products
- b) Oils and fats
- c) Spice and condiments
- d) Wheat and other flours
- e) Sugar and Preserve
- f) Fruit and Vegetable products
- g) Beverages Alcoholic and Non-Alcoholic

### Unit III

**Food Laws and Regulation:** Prevention of Food Adulteration Act 1954, Food Safety and Standards Act (2006), Food Safety and Standards Authority of India (FSSAI), BIS, FPO, APEDA.

### Recommended Books:

1. Gould, W.A and Gould, R.W. (1998). Total Quality Assurance for the Food Industries, CTI Publications Inc. Baltimore.
2. Furia, T.E. Ed. 1980. Regulatory Status of Direct Food Additives. CRC Press, Florida.
3. Rekha S. Singhal , Pushpa R. Kulkarni, Dananesh V. Rege, (1997). Hand Book of Indices of food Quality and Authenticity, wood head Publishing Ltd.
4. Siva Kiran, R.R. (2012). Manual for Detection of Common Food Adulterants, First Edition, IAPEN.
5. Battershal, J.P. (2013). Food Adulteration & its detection, General Books LLC.
6. Prevention of Food Adulteration Act, 4<sup>th</sup> Edition, Ashoka Law House, 2002

## Open Elective Paper (offered by Department of Genetics)

Paper Code: 16GENO1

Genetics & Society

Credits: 3

Time: 3 Hrs

Internal Assessment Marks: 20

Max. Marks: 80

### Instructions

There will be a total of seven questions. Question No. 1 will be compulsory and shall contain eight to ten short answer type questions without any internal choice and it shall cover the entire syllabus. The remaining six questions will include two questions from each unit. The students will be required to attempt one question from each of the four units. The students will attempt four questions in all.

#### Unit I

Basic principles of inheritance of characters, Chromosomes and genes, pedigree-gathering family history symbols, construction of pedigree ; Consanguinity and its effects; Sex linked anomalies: Haemophilia, Colour blindness; Sex limited and sex influenced traits. Human Health and Disease: Common syndrome according to numerical and structural alteration: Klinefelter, Down's, Turner, Achondroplasia,; Inherited enzyme defects in man: Albinism, Galactosemia; Multifactorial disorders: Diabetes, Schizophrenia, Huntington's disease, Alzheimer's disease; Methods of genetic testing, Prenatal diagnosis, New born screening; DNA fingerprinting: Paternity testing, Individual Identification.

#### Unit II

GM World: Green revolution, Application r-DNA technology in agriculture: Transgenic crops, Gene gun, GM foods, Ht, Bt and others, Concerns about bio-safety of genetically modified organism (GMO) (Allergen, toxicity, impact on biodiversity etc.); Indian regulatory system for testing of GMOs in laboratory, field trials and commercial release of transgenic ; potential benefits of GMOs.

#### Unit III

Microbial innovations in pharmaceutical, health, agricultural and industrial sectors; Strategies for selection and improvement of industrial strains of microorganisms; Stem cell research, Cloning designer babies, Organ banking, Transgenic animals, Creating transgenic animals, In vitro fertilization, Genetic counseling and reproductive decisions, Eugenics;

Role of Genetics for the improvement of Health, Agriculture and environment.

#### Suggested books:

- 1 Principles of Genetics by D. Peter Snustad and Michael J Simmons
- 2 Genes in the Environment- Rosie S. Hails, Wiley-Blackwell Publications
- 3 The Science of Genetics by Alan G. Athlerly, Jack R. Girton, John F. McDonald
- 4 Principles and branches of Medical Genetics, Emery and Rimoih, Churchill Livingstone, Newyork, Vol-1-3.
- 5 Industrial Microbiology, G. Reed (editor), CBS Publishers (A VI Publishing Company).
- 6 Modern Microbial Genetics (2002)-Streips U. N. and Yasbin R.E., Wiley-Liss
- 7 Plant Biotechnology (2006) - B. D. Singh, Kalyani Publishers
- 8 Plant Biotechnology-The Genetic Manipulation of Plants (2003) Slater A. Scott N. & Fowler M., Oxford University Press Inc Nigel Jen,
- 9 Animal Cell Biotechnology: Methods and protocols, Humana Press.
- 10 Genetics in Medicine 7th Ed (2007) - Thompson and Thompson, Saunders
- 11 Primose SB, Molecular Biotechnology, Panima, 2001

**M.A. Geography Semester-II Session 2016-17 onwards**  
Open Elective: 16GEOO1  
**BASICS OF GEOINFORMATICS**

Credit: 03 (3+0+0)  
End Semester Exam: 80 marks  
Internal Assessment: 20 marks  
Total: 100 marks    Time: 3hrs

**Learning Objectives**

This course is designed to give students an exposure to basics of geospatial technologies. It offers to learn the techniques of generation and management of earth surface information. An inter and multi disciplinary approach has been used to make subject interesting and useful for students. Latest technology of GPS is included to understand use of modern day navigation and surveying.

**Learning Outcomes**

Students will be able to learn the use of latest geospatial technology. It will help them to understand the spatial phenomena in a better manner with availability of real time and accurate information. These technologies being modern and interdisciplinary in nature will enable the students to apply this knowledge in various fields of life.

**Unit – I**

**Aerial Photography**

Aerial photography: history and development, advantages and limitations; Classifications of aerial photographs; Geometry of an aerial photograph; Scale of an aerial photograph; Availability and procurement of aerial photographs in India; Aerial photograph vs map.

**Unit – II**

**Remote Sensing.**

Introduction to Remote Sensing; electromagnetic radiation; stages of remote sensing; energy interactions in atmosphere; energy interactions with earth surface features and spectral signatures. Remote Sensing applications in land use/land cover, urban, environment, forest and disaster studies.

**Unit – III**

**Remote Sensing**

Remote Sensing platforms: airborne and space borne; satellite orbits: geostationary and near polar; Image data characteristics: resolutions- spatial, spectral, radiometric and temporal; Sensors and their types; Satellite missions of ISRO .

**Unit – IV**

**GIS and GPS**

Geographic Information System (GIS): definition and applications; GIS and remote sensing integration; components and elements of GIS; representation of earth surface features in GIS; introduction to Global Positioning System; GPS satellites constellations; GPS segments; Applications of GPS.

**Note (i):** Open Elective to be chosen from the basket of Open Electives (OEs) provided by the University.

(ii) The question paper will have five units. First four units of question paper will contain two questions from each unit. Candidate(s) are required to attempt one question from each unit. Unit-V shall be compulsory and shall contain eight short answer type questions covering entire syllabus. All questions carry equal marks.

**Recommended Readings:**

- [Paul Wolf](#), [Bon DeWitt](#), and [Benjamin Wilkinson](#). Elements of Photogrammetry with Application in GIS. USA: Mc-Graw Hill Education.2014.
- Avery, T.E., and G.L. Berlin. Fundamentals of Remote Sensing and Airphoto Interpretation, Macmillan, New York.1992.
- Campbell, J.B. Introduction to Remote Sensing, Guilford, New York.1996.
- Curran, Paul J. Principles of Remote Sensing, Longman, London & New York. 1985.
- Joseph, G. Fundamentals of Remote Sensing, Universities Press Hyderabad. 2005.
- Lillisand, T.M. and P. W. Kiefer. Remote Sensing and Image Interpretation, New York. John Wiley & Sons.1986.
- Burrough, P.A. and McDonnell, R.A. Principles of Geographic Information System. Oxford: Oxford University Press. 1998.
- Chang, Kang-tsung. Introduction to Geographic Information Systems. New Delhi: Tata McGraw-Hill.2006.
- Doberstein, Dan. Fundamentals of GPS Receivers: A Hardware Approach. New York: Springer

# MA GEOGRAPHY SEMESTER-II SESSION 2016-17 ONWARDS

Open Elective16GEOO2

## GEOGRAPHY OF INDIA: SYSTEMATIC AND REGIONAL

Credit: 03 (3+0+0)

Exam: 80 marks

Internal Assessment: 20 marks

Total: 100 marks

Time: 3 hrs

### Learning Objectives

History, geography and culture have comprised to make India into a major force in South Asia. The course provides an insight into different aspects of India's regional vitality towards unity, stability and progress.

### Learning Outcomes

The student will get familiarised with the geographic dimensions of India in terms of its political and administrative characteristics; aspects of its regional vitality; and formation of regions.

#### Unit-I

India: a historical-geographical expression; Size, location, and boundaries; Physical environment; Historical setting.

#### Unit-II

Unity in diversity of India: Unifying mechanism and divisive streaks; Evolution of the administrative map of India since Independence.

#### Unit-III

Regional vitality of India; multiculturalism in India; the Indian diaspora; India's cultural landscape.

#### Unit -IV

Regionalisation schemes of India: Physiographic (S.P. Chatterjee); Climatic (Koeppen and Trewartha); Agricultural (Jasbir Singh and C.B. Mamoria); and Industrial (B.N. Sinha).

**Note (i):** Open Elective to be chosen from the basket of Open Electives (OEs) provided by the University.

(ii) The question paper will have five units. First four units of question paper will contain two questions from each unit of the syllabus. Candidate(s) are required to attempt one question from each unit. The unit five shall be compulsory and shall contain eight short answer type questions covering entire syllabus. All questions carry equal marks.

### Recommended Readings:

1. Ahmad, Aijazuddin. 1999. *Social Geography*. Rawat Publication, New Delhi.

2. Chandna, R.C. 2002. *Geography of Population*. 5th edn. Kalyani Publishers, Delhi.
3. Deshpande, C.D. 1992. *India: A Regional Interpretation*, ICSSR and Northern Book Center, New Delhi.
4. Hussain, M. 2014. *Geography of India*. 5<sup>th</sup> edn. McGraw Hill Education, New Delhi.
5. Singh, Jagdish. 2003. *India: A Comprehensive Systematic Geography*. Gyanodya Prakashan, Gorakhpur.
6. Spate O.H.K. & A.T.A. Learmonth. 1967. *Geography of India and Pakistan*, Methuen, London.
7. Sukhwal, B. L. 1971. *India: A Political Geography*. Allied Publishers, New Delhi.
8. Tirtha, Ranjit. 2000. *Emerging India*. Rawat Publications, Jaipur.
9. Tiwari, R.C. 1999. *Geography of India*. Prayag Publishers, Allahabad.
10. Wadia, D. N. 1953. *Geology of India*. Macmillan & Co., London.

# HISTORY

**Paper: Nationalism In India**

**Paper Code: 16HISO1**

Max.Marks : 100

Theory : 80

I.A : 20

Time : 3 Hrs.

**Note:** Nine questions are to be set in all spreading into five units Each of the first four units shall contain two questions from each unit of the syllabus and Unit-V (Q. No. 9) which will be compulsory, shall contain eight short answer type questions (two marks each) covering the entire syllabus. The Candidates shall be asked to attempt five questions in all selecting one question from each unit including compulsory question. All questions shall carry equal marks.

## Unit – I

1. Approaches to Indian Nationalism : Conceptual Debates.
2. Emergence of Organized Nationalism.

## Unit-II

1. Trends till 1919
2. Gandhian Movements - Nature, Programme, Social Composition, Limitations and Challenges.

## Unit-III

1. Revolutionary and Left Movements.
2. Subhash Bose and INA and Telengana.
3. States' Peoples' Movements.

## Unit-IV

1. Working of Congress and Non-Congress Provincial Ministries.
2. Communal Politics and Partition.

### Suggested Readings :

- Desai, A.R. : Social Background of Indian Nationalism, Bombay, 1949
- Tara Chand : History of the Freedom Movement Vol. I, II, III, IV (4 Vols.), Delhi, 1961
- Majumdar, R.C. : History of Freedom Movement Vol. I, II, III, Calcutta, 1962-63
- Chandra Bipan and others : Communalism in Modern India, New Delhi, 1987
- " : Struggle for Independence of Indi, New Delhi, 1987
- Dhankhar, Jaiveer S. : A Short History of Hindustan Socialist Republic an Association, Delhi, 2001
- " : Prelude to Pakistan, Delhi, 2000
- Mahrotra, S.R. : The Emergence of Indian National Congress, Delhi, 1971
- Sarkar, S. : Modern India 1885-1947, New Delhi, 1983

**Note :** In addition, students are advised to consult the current Research Journals of History.

## **Front Office & Guest Services Management 18MHMCTO1**

**External Marks: 80**  
**Internal Marks: 20**  
**Credits: 3-0-0**

**Introduction to Travel and Tourism:** Overview, Evolution and constituents of travel and tourism industry. Five A's of Tourism, Types of Tourism.

**Introduction to Hospitality Industry:** Concept, scope and constituents. Evolution and growth of hotel Industry in the world.

### **Unit-2**

**Classification of Hotels:** Need and criteria for the classification of hotels. Emerging concepts in hotels. Global trends that will impact hotel industry.

**Hotel Organization:** Need of organization in hotels. Hotel Organization, Job description, Job specification and various departments and sub departments of a hotel.

### **Unit-3**

**Introduction to Front office:** Overview, Layout and different sections of front office department. Organization of front office staff, qualities of front office staff.

**Knowledge about Accommodation product:** Types of guest rooms, Meal plans and types of room rates.

### **Unit-4**

**Hotel Guest and Guest Relation:** Guest, Guest expectations, Guest Satisfaction, Guest dissatisfaction, and Guest Relation Management.

**Guest Services:** Guest services and its importance, handling guest mails and messages, paging, safe deposit facility and other services



**FUNDAMENTALS OF MANAGEMENT**  
**Course Code: 16IMSO1**

**MM: Th 80+IA 20**

Time: 3 hours

**Course Objective:**

The objective of this course is to expose the students to basic concepts of management and to enable them to gain appreciation for emerging ideas, techniques, procedures and practices in the field of management.

**Unit -I**

Introduction: concept and nature of management; evolution of management thoughts – traditional, behavioural, system and contingency viewpoints

**Unit -II**

Planning, decision making and organizing: nature and elements of planning, planning types and models; strategic planning – an overview; basic issues in organizing – work specialization, chain of command, delegation, decentralization, span of management, bases for departmentation

**Unit -III**

Leading: recognition of human factor, motivation models/approaches; leadership styles/behaviours, personal characteristics of effective leaders, leadership development

**Unit -IV**

Management control– concept and process, overview of control techniques, effective control system; evaluating corporate social performance; managing company ethics and social responsibility

**Suggested Readings:**

1. Robbins, S.P. and Decenzo, D.A. Fundamentals of Management , Pearson Education Asia, New Delhi
  2. Hellreigel, Management, Thomson Learning, Bombay
  3. Koontz, H and Wehrich, H; Management, Tata McGraw Hill
  4. Stoner, J et. al, Management, New Delhi, PHI, New Delhi
  5. Robbins & Coulter, Management, PHI, New Delhi
  6. Satya Raju, Management – Text & Cases , PHI, New Delhi
1. Richard L. Daft, Management, Thomson South-Western

**Instructions for External Examiner:** The question paper shall be divided in two sections. **Section ‘A’** shall comprise of eight short answer type questions from whole of the syllabus carrying two marks each, which shall be compulsory. Answer to each question should not exceed 50 words normally. **Section ‘B’** shall comprise 8 questions (2 questions from each unit). The students will be required to attempt four questions selecting one question from each unit. All questions will carry equal marks.

**Journalism and Mass Communication**  
**(Open Elective) [for students of other Dept.]**

**16JRM01**  
**MEDIA & SOCIETY**

**2<sup>nd</sup> Semester**

**Marks: 100**

**Credits: 3:0:0**

**Time Allowed: 3 Hours**

**Theory Marks: 80**

**Internal Assessment Marks: 20**

**Unit I**

1. Media Definition
2. Relationship of Media in Society
3. Impact of Media on society- recent trends
4. Media and Social Development

**Unit II**

1. Media Literacy
2. Impact of Media on children and youth
3. Media and gender issues
4. Media and Rural Society

**Unit III**

1. Media and Violence
2. Media and Rising Crime
3. Media and Democracy
4. Media and development of Scientific temperament
5. Media and environmental issues

**Unit IV**

1. Media accountability

2. Media and Economic development
3. Media and Nation building
4. Popular culture and media

**LL.M.**

Open Elective (Family Law)

PAPER CODE: 16LAWO1

MM: Th 80+IA 20

Time: 3 hours

**NOTE FOR EXAMINER/PAPER SETTER**

The question paper of each course will be divided into Five sections, each of the First Four Sections of the Question Paper will contain 2 questions respectively from Unit-1 to Unit-4 of the syllabus. The students will be required to attempt one question from each section. Section 5 of the question paper shall contain 8 short answer type questions of 3 marks each (without any choice) covering the entire syllabus. As such Section 5 will be compulsory. The examiner will be free to set the questions in problem forms based on case law.

**NOTE FOR STUDENTS( ON QUESTION PAPER)**

Attempt four questions from sections 1 to 4, selecting at least one question from each section. These questions shall carry 14 marks each. Section 5 is compulsory and each question in this section shall carry 3 marks.

**UNIT-I**

Application of Hindu Law, Sources of Hindu, Schools of Hindu Law, Hindu Joint Family, Features of Mitakshra and Dayabhaga Joint Families, Coparcenary, Classification of Property, Karta of Joint Family, Position, Liabilities and Powers of Karta. Karta's powers of Alienation, Coparcener's Power of Alienation, Coparcener's Right to Challenge Improper Alienation, Alienee's Rights and Remedies

Leading Case: Harihar Prasad V Balmika Prasad AIR 1975 SC 733

K.S. Subhiah Pillai V Commissioner of IT AIR 1999 SC 1220

**UNIT-II**

The nature and concept of Hindu Marriage, Evolution of the Institution of Marriage, The Hindu Marriage Act, 1955, Essential Conditions for Valid Hindu Marriage, Ceremonies of Marriage, Registration of Hindu Marriages, Remedy of Restitution of Conjugal Rights, Void and Voidable Marriages, Judicial Separation and Divorce, Various Types of Grounds for Divorce and Judicial Separation, Fair Trial Rule, Legitimacy of Children, Jurisdiction, Bars to Matrimonial Remedies, Ancillary Reliefs, Permanent Alimony and Maintenance, Custody etc.

Leading Case: Kailishwati V Ayudhia Parkash AIR 1977 PLR 216

Naveen Kohli V Neelu Kohli, (2006) 4 SCC 558

### **UNIT-III**

The Hindu Succession Act, 1956, Effects of the Hindu (Succession) Amendment, 2005, Rules of Succession to the Property of Hindu Male, Succession to the Property of Hindu Female, Succession to the Mitakshara Coparcener's Interest, General Rules of Succession, Partition, Subject Matter of Partition, Persons who have a Right to Partition & Right to Share, Persons who are entitled to Share, if, Partition takes place, Modes of Partition, How Partition is effected, Partial Partition, Reopening of Partition, Re-Union.

Leading Case: Raghuvamma V Chenchamma AIR 1964 SC 136  
Commissioner of Income Tax V Chandersen, AIR 1986 SC 1753

### **UNIT-IV**

The Hindu Minority and Guardianship Act, 1956, Concept of Minority and Guardianship, Natural Guardians and their Powers, Testamentary Guardian: Appointment and Powers, Certified Guardian, Defecto Guardian, Guardian By Affinity, The Hindu Adoption & Maintenance Act, 1956, Nature of Adoption, Essential Conditions for Valid Adoption, Effects of Adoption, Registration of Adoption, Maintenance As Personal Obligation, Maintenance of Dependents, Quantum of Maintenance, Maintenance As a Charge on Property

Leading Cases: G. Appaswami Chettiar V R.Sarangapani AIR 1978 SC 1051  
Githa Hariharan V Reserve Bank of India(1999)2 SCC 228

### **BOOKS RECOMMENDED**

Mulla	-	<u>Principles of Hindu Law</u>
Dr. Paras Diwan	-	<u>Modern Hindu Law</u>
Mayne's	-	<u>Hindu Law and Usage</u>
Dr. U.P.D.Kesari	-	<u>Modern Hindu Law</u>
Basant Kumar Sharma	-	<u>Modern Hindu Law</u>

**LL.M. SECOND SEMESTER EXAMINATION**  
**Open Elective (General Principles of Criminal Laws)**

PAPER CODE: 18LAWO2

MM: Theory 80 + IA

20 Time: 3 hours

Credits: 3:0:0

**NOTE FOR EXAMINER/PAPER SETTER:**

The question paper of each course will be divided into Five sections, each of the First Four Sections of the Question Paper will contain 2 questions respectively from Unit-1 to Unit-4 of the syllabus. The students will be required to attempt one question from each section. Section 5 of the question paper shall contain 8 short answer type questions of 3 marks each (without any choice) covering the entire syllabus. As such Section 5 will be compulsory. The examiner will be free to set the questions in problem forms based on case law.

**NOTE FOR STUDENTS (ON QUESTION PAPER):**

Attempt four questions from sections 1 to 4, selecting at least one question from each section. These questions shall carry 14 marks each. Section 5 is compulsory and each question in this section shall carry 3 marks.

**Unit-I**

Offence, Bailable Offence, Non-bailable offence, Cognizable offence, Non-Cognizable offence, Complaint, Inquiry, Investigation

**Unit-II**

Jurisdiction, Types of Jurisdiction, Summon Cases, Warrant Cases, Types of Courts

**Unit-III**

FIR, Powers of Police, Charge, Hurt, Grievous Hurt, Kidnapping

**Unit-IV**

Bail, Anticipatory Bail, Cases in which bail can be granted and bail can be refused.

## **16LISO1: Academic Integrity and Plagiarism**

**MM: Th 80+IA 20**

Time: 3Hrs.

### **Note**

The paper is divided into 4 units. The candidates are required to attempt 5 questions in all selecting 1 question from each unit (out of two internal choices). Question 1 is compulsory consisting of 8 short answer type questions spread over the whole syllabus. All questions carry equal marks.

### **Objectives**

- to know about academic integrity;
- to identify instances and types of plagiarism;
- to get awareness about plagiarism;
- to identify "fair use" applications to the use of someone else's materials;
- to find information about the correct way to cite a reference;
- to begin to develop your personal philosophy on academic integrity; to
- be cautious enough to have deterrence strategies of plagiarism.

### **Outcomes**

The course enables the students to get awareness about the nature and practice of academic integrity and its advantages. Further the completion of the course will guide the students and others to have deterrence policies and strategies to get away from plagiarism activities. After completion of the course, the learners will come to know, how citations are made properly. Over all awareness will be developed to maintain academic honesty with practical examples by the trainers.

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### **Unit 1: Academic Integrity**

Academic Integrity: meaning, definition and concept

Reasons: Individual reputation, personal integrity, professional competence, status or standing of the institution

Original writings and contribution to society

Writings and Impact: good and original writings bring credibility; good impact factors; writings meant for the readers and society

### **Unit 2:Plagiarism**

Plagiarism basics: meaning, definition and concept

Plagiarism: concept, need and importance, definitions; types

Copyright and fair use

Hoes does it occur: intentional and unintentional; innocence vs. deception

### **Unit 3:Plagiarism Deterrence**

Deterrence: avoidance, awareness

Guidelines: summarizing, paraphrasing, direct quotations, language and vocabulary

Citations: citation basics; citation styles: parenthetical and superscription

Style manuals : Chicago, APA, MLA, Harvard

### **Unit 4: Measures, initiative and university agencies**

Research and Citation policies: formulation of research polices

Regular trainings & awareness; role of librarians; handling online resources

Anti-plagiarized software; Turnitin; I-authenticate; usefulness and limitations

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### **Suggested Readings**

Cvetkovic, Vibiana Bowman & Anderson, Katie Elson (Eds.) (2010). *Stop plagiarism: a guide to understanding and prevention*. New York: Neel-Schuman.

Lampert, Lynn D. (2008). *Combating student plagiarism: an academic librarian's guide*. Oxford: Chandos.

Posner, Richard (2007). *The little book of plagiarism*. New York: Pantheon Books.

Roth, Lorie (1999). Educating the cut-paste generation. *Library Journal*, 124(18), pp.42-44.

Scalon, Patrick (2003). Student online plagiarism: how do we respond? *College Teaching*, 51(4): pp. 161-65.

Swain, N.K. Publish or perish: What the Indian policy makers think about it? *University News*, 52.15 (April 14-20, 2014): pp. 23-28.



***Open Electives to be offered  
by  
Department of Mathematics***

<b>Course Code</b>	<b>Title of the Course</b>	<b>Theory Marks</b>	<b>Internal marks</b>	<b>Practical Marks</b>	<b>Credits (L:T:P)</b>
<b>To be offered in 2<sup>nd</sup> Semester</b>					
<b>16MATO1</b>	Mathematical Techniques and Applications	80	20	--	3:0:0
<b>16MATO2</b>	Parametric and Non-Parametric Tests	80	20	--	3:0:0

**16MAT01: Mathematical Techniques and Applications**  
**(To be offered in Even Semester)**

*Time: 03 Hours*  
**MM. Th 80+IA 20**  
**Time: 2 h**  
*Credits : 3:0:0*

**Section - I**

Idea of Real Number System, Sets, Relations and functions.  
Solutions of linear and quadratic equations; Logarithms and Exponents. Trigonometric functions.

**Section - II**

Concepts of limit, Continuity and Differentiation. Slope of a straight line.  
Increasing and Decreasing functions, Maxima and Minima.

**Section - III**

Integration - Simple techniques including integration by substitution and by parts for algebraic, exponential and logarithmic functions, Definite integrals. Differential Equation- Solution of first order linear differential equation.

**Section - IV**

Measures of Central Tendency and Dispersion. Linear Correlation and Regression.

**Note :** The question paper will consist of **five** units. Each of the first four units will contain **two** questions from unit **I , II , III , IV** respectively and the students shall be asked to attempt **one** question from each unit. Unit five will contain **eight to ten** short answer type questions without any internal choice covering the entire syllabus and shall be **compulsory**.

**Books Recommended:**

1. Maurice, Weir D., Hass J., Frank, Giordano R., Thomas' Calculus, Pearson.
2. Strang, G., Calculus, Wellesley-Cambridge Press.
3. Heinbockel, J.H., Introduction to Calculus, Vol - 1.,  
<http://www.math.odu.edu/~jhh/Volume-1.PDF>
4. Goon, A.M, Gupta, M.K and Dasgupta, B, Basic Statistics, World Press.
5. Gupta, S.P, Statistical Methods, Sultan Chand & Sons, New Delhi.

## 16MATO2: Parametric and Non-Parametric Tests

(To be offered in Even Semester)

*Time: 03 Hours*

**MM. Th 80+IA 20**

**Time: 2 h**

**Credits : 3:0:0**

### Section - I

Parameter and Statistic: Sampling distribution of a statistic, standard error and its utility. Tests of significance: Null and alternative hypotheses, Two types of error, Critical region and level of significance, One-tailed and two-tailed tests, Critical values, Procedure for testing of hypothesis.

### Unit -II

Large Sample Tests: Tests of significance for single proportion and single mean, for difference of two proportions, two means and two standard deviations, related confidence intervals for population parameters. Chi-square tests for goodness of fit, Test of independence of attributes.

### Unit -III

t-test for single mean, difference of means, F-test for equality of two population variances, related confidence intervals. Applications of ANOVA for one-way and two-way classified data.

### Unit -IV

Non-parametric tests: Advantages and drawbacks of non-parametric tests over parametric tests, One sample and two sample sign tests, Median test, Wilcoxon-Mann-Whitney test, One sample runs test, Spearman rank correlation test.

**Note :** The question paper will consist of **five** units. Each of the first four units will contain **two** questions from unit **I , II , III , IV** respectively and the students shall be asked to attempt **one** question from each unit. Unit five will contain **eight to ten** short answer type questions without any internal choice covering the entire syllabus and shall be **compulsory**.

### Books Recommended:

1. Mood, A. M., Graybill, F. A. and Boss, D. C., Introduction to Theory of Statistics, McGraw-Hill.
2. Goon, A. M., Gupta, M. K. and Das Gupta, B., Basic Statistics, World Press.
3. Gupta, S.C. and Kapoor, V. K., Fundamentals of Mathematical Statistics, S. Chand Pub., New Delhi.
4. C. R. Kothari, Research methodology, New Age International Publishers.

**M.Sc. Medical Biotechnology Semester -II**  
**Course Title: Principles of Medical Biotechnology-I**

**MM. Th 80 + IA 20**

**Course Code: 16MBT01**

**Time: 3h**

**NOTE:** The examiner is required to set seven questions in all. Question No. 1 will be compulsory and short answer type covering the entire syllabus. The remaining six questions will be set with two questions from each unit. The candidate will be required to attempt Question 1 and four more selecting at-least one from each unit.

**Theory**

**Unit -I**

Innate and acquired immunity. Nature and Biology of antigens and super antigens. Antibody structure and function. Antigen - antibody interactions, ELISA, RIA, Western blot, Immunoprecipitation, Inflammation- Acute and chronic inflammation, Hypersensitivity. Blood group – ABO and Rh. Haemoglobin – Structure, biosynthesis and catabolism.

**Unit -II**

Different types of anaemia and their causes (Deficiency of iron, B12 and folic acid, hemolytic, aplastic and genetic disorders). Homeostasis – factors, mechanism, anticoagulants, procoagulants. Host microbe interactions, entry of pathogens, growth and multiplication of the pathogens, Endotoxins, Collection and transport of specimens for diagnosis

**Unit -III**

Methods of antimicrobial activity determination, types of epidemiology, tools of epidemiology, Recognition of an infectious disease in a population, types of epidemics, control of epidemics. General properties of viruses, viral multiplication, viral hemagglutination, Cultivation of viruses, Classification and nomenclature of viruses, host response to virus infection

**Recommended Books**

1. John E. Hall, Medical Physiology by Guyton, Saunders, 12<sup>th</sup> edition
2. Mims' Medical Microbiology By (author) Richard Goering, By (author) Hazel Dockrell, By (author) Mark Zuckerman, By (author) Ivan M. Roitt, By (author) Peter L. Chiodini Saunders (W.B.) Co Ltd.
3. Benjamin E. (1996), Immunology - A short course 3rd Edition, John Wiley, New York
4. Kuby J. (1997), Immunology, 3rd Edition, W.H. Freeman & Co., New York
5. Roitt, I.M. (1997), Essential Immunology, 9th Edition, Oxford Black Well Science, London
6. Tizard I.R. (1995), Immunology - An introduction, 4th Edition, Philadelphia Sauders College press.

(SEMESTER-II)

**Open Elective: 18MCBO1: Microbes and Environment**

***Time: 03 Hours***

**MM. Th 80+IA 20**

**Time: 2 h**

***Credits : 3:0:0***

**Note: The question paper will consist of 9 questions. Students will have to attempt 5 questions in total - Question no. 1 will comprise of short answer questions covering the entire syllabus and will be compulsory. Two questions to be set from each Unit and students will have to attempt one from each Unit.**

**Unit – I**

Systematics&Biodiversity:Classification and nomenclature of microorganism.Salient featuresof different groups: Acellularmicroorganisms (Viruses,Viroids, Prions) and Cellular microorganisms (Bacteria, Algae, Fungi andProtozoa) in reference to their distribution and occurrence, morphology, mode ofreproduction and economic importance.

**Unit – II**

Characteristics of extremophiles:Thermophiles, Methanophiles, Alkalophiles, Acidophiles, Halophiles and Barophiles: Classification, habitats, ecological aspects andapplications.

**Unit – III**

Microbiological techniques:Preparation of culture media, Pure culture isolation; cultivation,maintenance and preservation/stocking of pure cultures; cultivation of anaerobicbacteria, and accessing non-culturable bacteria. Physical and Chemical methods for the control of microorganisms

**Unit – IV**

Scope of Microbiology:Role of microorganisms in Food industry, Pharmaceutical industry, Production ofIndustrial enzymes, Agriculture: bio-fertilizers, bio-pesticides. Environment:bioremediation, bioleaching

**Suggested readings:**

1. Brock TD., Milestones in Microbiology, Infinity Books.
2. Pelczar M.J., Chan E.C.S. & Kreig N.R., Microbiology: Concepts and Application.,Tata McGraw Hill.
3. Stainier RY, Ingraham JL, Wheelis ML & Painter PR General Microbiology, Publisher: MacMillan.
4. Madigan M.T., Martinko J.M. and Parker J., Brock Biology of Microorganisms: Prentice-Hall , Inc USA.
5. Atlas R.M., Principles of Microbiology, Wm C. Brown Publishers.
6. Vandenmark P.V. and Batzing B.L., The Microbes – An Introduction to their nature and Importance: Benjamin Cummings. Microbiology

**M.Sc. Physics Semester II**  
**Open Elective – I Sources of**

**PAPER CODE: 16PHY01**

**Energy – I**

Theory Marks: 80  
Internal Assessment: 20  
Time: 3 hours

**Unit I**

**Introduction**

Limitation of conventional energy sources, need and growth of alternative energy sources, basic scheme and application of direct energy conservation.

**Solar Cells:**

Solar energy: Introduction, The characteristics of the sun, Definitions related to solar radiations, solar radiation geometry, Estimation of daily solar radiation. Theory of solar cells. Solar cell materials, solar drying, solar furnaces, Solar cooking, solar green house technology, solar thermal power generation, solar cell array.

**Unit II**

**Solar Thermal Energy:**

Solar radiations, flat plate collectors and their materials, applications and performance, focusing of collectors and their materials, applications and performance; solar thermal power plants, thermal energy storage for solar heating and cooling, limitations.

**Unit III**

**Geothermal Energy:**

Resources of geothermal energy, thermodynamics of geo-thermal energy conversion-electrical conversion, non-electrical conversion, environmental consideration, estimates of geothermal power, nature of geothermal fields, advantages & disadvantages of geothermal energy forms, applications of geothermal energy. Geothermal power plant.

**Fuel Cells:**

Principle, working of various types of fuel cells, performance and limitations.

**Unit IV**

**Wind Energy:**

Wind power and its sources: Principle of working of Wind Energy, performance and limitations of energy conversion systems. Site selection, criteria, momentum theory, wind characteristics.

**Text / References Books:**

1. John Twideu and Tony Weir, "Renewal Energy Resources" BSP Publications, 2006
2. M.V.R. Koteswara Rao, "Energy Resources: Conventional & Non-Conventional" BSP Publications, 2006.
3. D.S. Chauhan, "Non-Conventional Energy Resources" New Age International.
4. C.S. Solanki, "Renewal Energy Technologies: A Practical Guide for Beginners" PHI Learning.
5. Peter Auer, "Advances in energy system and Technology" Vol I & II Edited by Academic Press.
6. G.D. Rai, "Non-conventional Energy sources" Khanna Publishers
7. Raja A.K., "Introduction to Non-Conventional Energy Resources" Scitech Publications.  
Fahrenbruch and Bube, "Fundamentals of Solar cells. Photovoltaic Solar Energy"

**SYLLABUS : M.A.(P) Sem-II Open Elective**

**Paper Code- 16PUBO1**

**Administrative Literacy**

**Total Credit: 4+0+0 =4**

**L+T+P**

Total Marks = 100

Semester End Exam = 80

Internal Assessment = 20

Time = 3 hrs.

**Note:**

The question paper will consist of 5 units containing 9 questions. The students are required to attempt one question from each unit. Question no 9 consisting of eight short answer questions covering entire syllabus, is compulsory.

**Unit-I**

Administrative Structure at Central Level – Office of President, Prime Minister’s Office, Cabinet Secretariat & Central Secretariat

**Unit-II**

Administrative Structure at State Level – Office of Governor, Chief Minister’s Office, State Secretariat & Chief Secretary

**Unit-III**

Administrative Structure at Division & District Level: Divisional Commissioner, Deputy Commissioner, Superintendent of Police, District Rural Development Agency, Haryana Urban Development Authority, District Development & Panchayat Officer

**Unit-IV**

Flagship Programmes of Central Government: Mahatma Gandhi National Rural Employment Guarantee Scheme, Rashtriya Swasthya Bima Yojana, Pradhan Mantri Kaushal Vikas Yojana, Mid-day Meal, Integrated Community Development Scheme, Targeted Public Distribution System.

**Suggested Readings:**



1. Maheshwari, S.R., Evolution of Indian Administration, New Delhi: Orient Longman, 1974.
2. Maheshwari, S.R., Indian Administration, New Delhi: Orient Longman.
3. Arora, R.K. and Rajni Goyal, Indian Public Administration, New Delhi: Wishwa, 1997..
4. Misra, B.B., The Central Administration of East India Company, London: Manchester Press, 1959..
5. Sarkar, J.N., Mughal Administration, Calcutta: M.C. Sarkar, 1935.
6. Ray, Anirudh , Some Aspects of Mughal Administration, New Delhi: Kalyani 1984.
7. Khosla, R.P., Administrative Structure of the Great Mughals, Delhi: Kanti Publications, 1991.
8. Prasad K. Nayak, S. Sen and G.S. Mansukhani (Eds.), Indian Administration, New Delhi: Unique Publishers, 2007
9. Fadia, B.L., Indian Administration, Agra: Sahitya Bhawan, 2007.
10. Chand Ashok, Indian Administration, London: Allen and Unvin, 1967.
11. Singh Hoshiar, Indian Administration Allahabad: Kitab Mahal, 1998.
12. Kataria, Surender , Indian Administration, Jaipur: RSBA
13. Maheshwari, S.R., State Governments in India, New Delhi: Macmillan, 2000.
14. Padhi, A .P. State Administration in India, Delhi: Uppal, 1998.
15. Sharma, Ashok, Bharat Mein Prashashnik Sansthan, Jaipur: RSBA, 2003.
16. Arora, Ramesh and Geeta Chaturvedi, Bharat Mein Rajya Prashashan, Jaipur, RSBA, 2001
17. Sharma, Harish Chander, State Administration in India (Hindi) Haipur: College Book Deport, 2002.

**M.A. Political Science**  
**Semester II**  
**(16POLO1)**

**Paper: Disaster Management-I (Open Elective A)**

<b>Max. Marks</b>	<b>: 100</b>
Theory Paper	: 80
Internal Assessment	: 20
Time	: 3 Hrs

**Note:**

The question paper will be divided into five units carrying equal marks i.e. 16 marks. Students shall be asked to attempt one out of two questions from each unit. Unit five shall contain eight short answer type questions without any internal choice and it shall be covering the entire syllabus. As such, all questions in unit five shall be compulsory.

**UNIT I**

Disaster Management: Meaning, Concepts, Principles, Scope, Objectives and Approaches  
Elements of Disaster Management

**UNIT II**

Disaster Mitigation: Hazard Assessment, Vulnerability Assessment, Risk Assessment, Protective

Measures and

Public Information

Disaster Preparedness: Disaster Plan, Damage Inspection, repair and Recovery procedures, Communication and Control Centers, Disaster Forecasting, Warning and Prediction

**UNIT III**

Disaster Relief: Rapid Damage Assessment operations, Evacuation and Shelter, Media Coverage, Relief Aid, Maintain

#### **UNIT IV**

Reconstruction Planning: Meaning and Economic and Social Rehabilitation

#### **Essential Readings:**

1. Beatley, Timothy (1998). *The Vision Burby, Raymond (ed.), Cooperating with Hazards with Land-Use Planning*  
Washington, D.C., Joseph Henry Press.
2. David Godschalk, Timothy Beatley, Phil J. Kaiser (1998).  
*Natural Hazard Mitigation: Recasting*  
Island Press.
3. FEMA (2000). Planning for a Sustainable Hazard Mitigation and Livability. *Washington*
4. Godschalk, David R., Timothy Beatley, P Edward J. Kaiser

# SYLLABUS FOR OPEN ELECTIVE (SANSKRIT)

Semester- II

Credit- 3

Course code- 18SKTO1

M.M-100

Theory-80

Internal Assessment-20

## Ancient Indian Culture and Philosophy

¼izkphu Hkkjrh; laLd`fr ,oa n"kkZu½

Unit I :	General Study of Ramayana and Mahabhart	20
?kVd ,d %	¼jkek;.k o egkHkkjr dk lkekU; v/;;u½	
(i)	General Introduction ¼lkekU; ifjp;½	
(ii)	Recenssions ¼laLdj.k½	
(iii)	Society ¼lekt½	
(iv)	Family Relations ¼ikfjokfjd IEcU/k½	
(v)	Education ¼f"kk½	
(vi)	Politics ¼jktuhfr½	
(vii)	Economy ¼vFkZO;oLFkk½	
(viii)	Situation of Women ¼fl=;ksa dh n"kk½	
Unit II	: Verses related to, the following headings of the Nitishtak 20 Murkhaninda, Vidhyamahima, Sajjanprashansa, Dhanamahima, Durjananinda, Propakarmahima, Bhagyamahima, Karmamahima, Dhirpurushaprashansa	
?kVd nks %	नातरातक क अधालाखत शाषका स मुखानर , धनर सजजनप्र कमर परिषका	
Unit III :	Śrimadbhagavad Gītā – II Chapter	20
?kVd rhu	Jhen~Hkxon~xhrc % f}rh; v/k;	
Unit IV :	Yoga Philosophy	20
?kVd pkj	;ksx n"kkZu	
(i)	General Introduction to Yoga – Citta, Vritti, Iśvara ;ksx n"kkZu dk lkekU; ifjp; & fpUK] o`fUK] bZ"oj	
(ii)	Yoga for Social Health – Maitri, Karunā, Muditā, Upekshā, Yama ;ksx ,oa lkekftd LokLFk; & eS=h] d#.kk] eqfnrk] mis{kk] ;e	
(iii)	Yoga for physical health – Niyama, Āsana, Prānāyāma ;ksx ,oa "kkjhfd LokLF; & fu;e] vklu] izk.kk;ke	
(iv)	Yoga for mental health – Pratyāhāra, dhāranā, dhyāna, samādhi. ;ksx ,oa ekufld LokLF; & izR;kgkj] /kkj.kk] /;ku] lekf/k	
Guidelines :	Students will be required to attempt five questions of 16 marks each.	
<b>fn"kk funsZ"k &amp;</b>		
	Question no. 1 will comprise eight short answer type questions from all Units.	
Guidelines for other Four questions are as under:		
Unit I :	One critical question out of two Or two shortnotes out of four.	16
Unit II :	One critical question out of two Or two shortnotes out of four.	16

Unit III :	One critical question out of two Or two shortnotes out of four.	16
Unit IV :	One critical question out of two Or two shortnotes out of four.	16

Recommended Books (vuq"kaflr xzUFk) :

1. jkek;.k & xhrk izsl xksj[kiqj
2. egkHkkjr & xhrk izsl] xksj[kiqj
3. Srimad Valmikiya Ramayana with Commentaries in 6 Vols. Hkkjrh; fo|k izdk"ku] tokgj uxj] fnYyh & 7
4. Srimad Mahabharatam Ed. by T.R. Krishnacharya – Indian Book Centre, Sri Satguru Publications, 24/4, Shakti Nagar, Delhi.
5. Valmiki Ramayana me Varnit Arthik Jeevan – Kaveri Book Service
6. Valmiki Ka Rajdharma – Kaveri Book Service
7. Jhijke ds ;qx dk frfFk fu/kkZj.k % iq'dj HkVukxj] eksrhyky cukjlh nkl] fnYyh
8. Politics and Ethics in Ancient India (As depicted in Mahabharta) : M. Jauhari – Hkkjrh; fo|k izdk"ku] tokgj uxj] fnYyh
9. Religion and Society in Ancient India : Om Parkash - Hkkjrh; fo|k izdk"ku] tokgj uxj] fnYyh
10. jkek;.kdkyhu lekt ,oa laLd`fr % txnh" k pUnz HkV~V & Hkkjrh; fo|k izdk"ku] tokgj uxj] fnYyh
11. साक्षात्कार , संपादक प्राफसर सुरद्र कुमा। , प्रकाशक दवरा पाब्लक , नई द।
12. Jhen~Hkxon~xhrk & xhrk izsl] xksj[kiqj
13. A Bhagavad Gita : Kappuswami – pkS[kEck vkfj;.Vkfj;k] fnYyh
14. ikr×ty;ksxlw=e~ ¼O;kIHkk';e~½ & O;kCE czāyhueqfu
15. ikr×ty;ksxlw=e~ & O;kCE lqjs"kpUnz JhokLrO;
16. ikr×ty;ksxlw=e~ & O;kCE gfjgjkUn vkj.;
17. O;k[;kdkjksa dh n`fV esa ikr×ty;ksx n" kZu & foeyk d.kkZVd
18. The Yoga System of Patanjali – J.H. Woods.
19. Essence of Yoga – Reflections on the Yoga Sutras of Patanjali by Bernard Bauan Chand – Indian Book Centre, Sri Satguru Publications, Delhi.
20. Meditative Yoga : Integrating Body, Breath and Mind by Are Holen and Terbojrn Hobbel : Motilal Banarsidass, Delhi.
21. The Art and Science of Raja Yoga by J. Donald Walters : Motilal Banarsidass, Delhi.

MA 2<sup>nd</sup> Semester (Open Elective Paper) to be chosen from the common pool of the University.

Sem	Paper No	Code	Nomenclature of Paper	Contact hours/L+T+P	Marks			Credit
					Theory	I.A	Total	
II	Paper	16SOCO1	Understanding Sociology	4:0:0	80	20	100	3

**Scheme of Examination:**

It is decided to adopt the new scheme of Choice Based Credit System of examination whereby all the papers have four units comprising of 80 marks and the Internal Assessment component will be of 20 marks in all the Semesters. In the theory paper students will be asked to attempt four questions from the four units selecting at least one question from each unit and the 5<sup>th</sup> question shall be compulsory which will cover all units in the format of short answer type questions comprising of about 50 to 60 words. Thus, the total marks for all the five questions i.e. four from the units (16x4=64) and the 5<sup>th</sup> compulsory question of short answer numbering eight of 2 marks each i.e (8x2=16) thus making the total weight age to 80 marks. The detail of Internal Assessment of 20 marks has been prescribed by the University is given below:-

(a) One Class Test	:	10 Marks
(b) One Assignment	:	5 Marks
(c) Attendance	:	5 Marks
Less than 65%	:	0 Marks
Up to 70%	:	2 Marks
Up to 75%	:	3 Marks
Up to 80%	:	4 Marks
Above 80%	:	5 Marks

**M.A.(Sociology)**  
**Semester-II**  
**Open Elective Paper- -16SOC01**  
**Understanding Sociology**

**Maximum Marks: 100**  
**Theory: 80**  
**Internal Assessment: 20**  
**Time : 3 Hours**

**Note:**

3. **Nine question would be set in all.**
4. **Question No. fifth shall be based on the entire syllabus and would be compulsory. It would contain eight short answer questions of two marks each.**
5. **There would be two questions (16 marks each) from each of the four units.**
6. **The candidate would be required to attempt four questions (one compulsory and other four questions selecting one from each unit).**

**Unit-I**

Sociology: Meaning and Definition, Beginning and Growth of Sociology; The Scope of Sociology; Relationship with History, Anthropology, Economics.

**Unit-II**

Society: Types of society; Community and its characteristics; Social Groups and their types; Social Control: Functions and forms.

**Unit-III**

Social Stratification: Its characteristics and Bases; Social Mobility: Meaning and its types, Socialization: Stages and agencies of socialization; Social Change: Meaning and factors.

**Unit-IV**

Family: concept, forms and changing pattern of families; Marriage: concept and forms; Kinship: terminology, usages and incest.

**References:**

- MacIver, R.M. and C.H.Page (1985), *Society*, New Delhi: Macmillan.
- Giddens, Anthony, (1993), *Sociology*. Cambridge: Polity Press.
- Spencer, Metta (1976), *Foundations of Modern Sociology*, New Jersey: Prentice-Hall
- Johnson, H.M. (1983), *Sociology: A Systematic Introduction*, New Delhi: Allied Publishers.
- Haralambos, M. (1989), *Sociology: Themes and Perspectives*, New Delhi: Oxford University Press.
- Fichter, Joseph H. (1957), *Sociology*, Chicago: The University of Chicago Press.
- Bottomore, T.B. (1972), *Sociology*, New York: Vintage Books.
- Davis, K. (1949), *Human Society*, New York: Macmillan.
- Moore, Wilbert E. (1974), *Social Change*, Englewood Cliffs: Prentice –Hall.
- Rawat, H.K. (2013), *Contemporary Sociology*, Jaipur: Rawat Publications. Singh, J.P. (1999), *Sociology: Concepts and Theories*, New Delhi: Prentice-Hall.

## Quantitative Techniques Paper Code: 16STAO1

(2<sup>nd</sup> Semester)

Maximum Marks-80  
Internal Assessment Marks—20  
Time:-03 Hours  
Credit: 03

### Section –I

Classification of Data, variable and measurement scales. Presentation of Data. Measures of Central Tendency and Dispersion, Skewness and Kurtosis. Measures of Association of Attributes. Correlation and Regression. Principle of Least Squares , Multiple and Partial correlation. Fitting of Polynomial and Exponential Curves.

### Section –II

Random variables. Probability mass function, Probability density function and Commulative distribution function. Expectation and its properties. Moments, moment generating function and probability generating function. Discrete Probability distributions: Bernolli, Bionomial, Poisson, Negative Binomial, Geometric and Uniform. Continuous Probability distributions: Normal, Exponential, Log Normal and Uniform, Fitting of Bionomial, Poisson and normal distribution.

### Section –III

Index numbers: Types, uses and their construction. Cost of living index numbers. Test of adequacy of Index numbers.

Time Series: Components and Models of time series. Measurements of trend and seasonal indices, Forecasting and Estimation.

### Section –IV

Statistical Quality Control. Purposes and construction of control charts for variables and attributes using 3 sigma limits and 6 sigma limits. Single and double Sampling Inspection plans. Natural tolerance limit and modified control limits.

Vital statistics: Methods of obtaining Demographic data, Measurement of Mortality and Fertility. Complete Life and Abridged Life Tables.

### **Books Recommended**

- |  |   |   |
|--|---|---|
| 1. Goon, A.M., Gupta, M.K. and Dasgupta, B.    | : | Outline of Statistics Volume-I & II           |
| 2. Goon, A.M., Gupta, M.K. and Dasgupta, B.    | : | Fundamental of Statistics Volume-I &II        |
| 3. Rohtagi, V. K. and Md. Ehsanes Saleh, A. K. | : | An Introduction to Probability and Statistics |
| 4. Mood, A.M., Graybill, F.A. and Boes, D.C.   | : | An Introduction to Theory of Statistics       |
| 5. Croxton, F.E. and Cowden, D.J.              | : | Applied General Statistics                    |
| 6. Kendall S.M. and Stuart A.                  | : | The Advanced Theory of Statistics             |

**Note:** The examiner is to set the question paper into five units- A, B, C, D & E. In each unit A, B, C & D, he/she has to set two questions of 16 marks each from section I, II, III, & IV respectively and the candidate will attempt one question from each unit. In unit E, there will be 8 short answered questions of 2 marks each, covering the whole syllabus and the candidate has to attempt all the questions.



## Sampling and Estimation Techniques

PAPER CODE: 16STAO2

Maximum Marks-80  
Internal Assessment Marks—20  
Time:-03 Hours  
Credit: 03

### Section –I

Population, sample, sampling distribution, standard error. Testing of Hypotheses: Simple and composite hypotheses, Null and alternative hypotheses, two types of errors, critical region and level of significance, one tailed test, two tailed test, Test of significance (Single and two samples problems) for normally distributed data. Goodness of fit test.

### Section –II

Sample versus Complete Enumeration. Designing of Sample Surveys, Sources of Errors in Sample Surveys, Types of Non-Response Errors.

Probability and Non-probability Sampling: Simple Random Sampling with and without replacement for the estimation of Mean and Total, Determination of Sample Sizes of specified precision.

### Section –III

Stratified Sampling: Proportional and Optimum Allocation, Estimation of gain due to stratification, Construction of strata, Determination of number of strata. Systematic, Cluster and Probability Proportional to Size Sampling. Comparison of stratified sampling with simple random sampling.

### Section –IV

Analysis of Variance: one- way, two -way (with one and multiple but equal number of observations per cell). Completely Randomized Designs, Randomized Block Designs and Latin Square Designs. Factorial Experiments: Definition, Estimation of factor's effect, Analysis of the factorial experiments, Confounding: complete and partial confounding.

### **Books Recommended**

- |   |   |  |
|---|---|--|
| 1. Mood A.M., Graybill, F.A. & Boes, D.C.   | : | Introduction to the Theory of Statistics   |
| 2. Goon, A.M., Gupta, M.K. and Dasgupta, B. | : | Fundamental of Statistics, Vol-II          |
| 3. Singh D. & Chaudhary F.S.                | : | Theory & Analysis of Sample Survey Designs |
| 4. Mukhopadhyay, Primal                     | : | Theory and Methods of Survey sampling      |
| 5. Dass, M.N. and Giri, N.C                 | : | Design and Analysis of Experiments         |

**Note:** The examiner is to set the question paper into five units- A, B, C, D & E. In each unit A, B, C & D, he/she has to set two questions of 16 marks each from section I, II, III, & IV respectively and the candidate will attempt one question from each unit. In unit E, there will be 8 short answered questions of 2 marks each, covering the whole syllabus and the candidate has to attempt all the questions.

## M.D.UNIVERSITY, ROHTAK

**16CSE01**

### **Computer Science Principles (Open Elective)**

**MM:T80+IA20**

**Credit 3**

**Time: 3 Hr**

**Instructions for setting of paper:** Nine questions are to be set in total. First question will be short answer question covering whole syllabus and will be compulsory to attempt. Next eight questions will comprise of two questions each from the four sections. Student will be required to attempt four more questions selecting one from each section. Each question will be of 16 marks

#### UNIT I

Fundamental of computer science and computational thinking: logical reasoning, problem solving, data representation, processing of data, abstraction, managing complexity, operation of computers and networks, effective Web searching, ethical, legal and social aspects of information technology.

#### UNIT II

HTML and XHTML basics- LIST – unordered list – nested and ordered list – Basic HTML Tables – Intermediate HTML table and Formatting – basic HTML Forms and Formatting – More Complex HTML Forms – Frameset Element – Nested Frameset. Style Sheets and Graphics: Introduction to Style sheets – Formatting Text by Using Style Sheets – Formatting Paragraphs by Using Style Sheets, Java Script Basics.

#### UNIT III

Data Mining: Introduction: Motivation, Importance, Knowledge Discovery Process, KDD and Data Mining, Data Mining vs. Query Tools, Kind of Data mining, kind of data, Functionalities, interesting patterns, Classification of data mining systems, Major issues, from Data warehousing to data Mining.

#### UNIT IV

Computer Networks: Network fundamentals: Local Area Networks (LAN), Metropolitan Area Networks (MAN), Wide Area Networks (WAN), Wireless Networks, Inter Networks. Reference Models: The OSI model, TCP/IP model. Operating Systems: Main functions of operating systems. Multi Programming, multiprocessing, and multitasking. Deadlock and CPU scheduling algorithms

#### TEXT BOOKS

1. Blown To Bits: Your Life, Liberty and Happiness After The Digital Explosion by Hal Abelson, Ken Leeden and Harry Lewis, 2010
2. Thomas A. Powell, McGraw-Hill “HTML & CSS: The Complete Reference”, Fifth Edition (Complete Reference Series) Osborne Media; 5 edition, 2010.
3. Krzysztof J. Cios, Witold Pedrycz, Roman W. Swiniarski, “Data mining: a knowledge discovery approach”, Springer, 2007

**16CSEO2**

**Software Engineering Practices  
(Open Elective)**

**MM:T80+IA20**

**Credit 3**

**Time: 3 Hr**

**Instructions for setting of paper:** Nine questions are to be set in total. First question will be short answer question covering whole syllabus and will be compulsory to attempt. Next eight questions will comprise of two questions each from the four sections. Student will be required to attempt four more questions selecting one from each section. Each question will be of 16 marks

**UNIT I**

Software Engineering-Software Process- Generic process model-Prescriptive process model-specialized, unified process -Agile development-Agile Process- Extreme Programming- Other agile Process models-Software engineering Knowledge-core Principles-Principles that guide each framework Activity,

**UNIT-II**

Requirements Engineering-Establishing the Groundwork-Eliciting Requirements-Developing use cases- Building the requirements model- Negotiating, validating Requirements- Requirements Analysis- Requirements Modeling Strategies.

**UNIT III**

Design Process- Design concepts: Abstraction, Architecture, patterns, Separation of Concerns, Modularity, Information Hiding, Functional Independence, Refinement, Aspects, Refactoring, Object Oriented Design Concepts, Design Classes- Design Model: Data, Architectural, Interface, Component, Deployment Level Design Elements, Software Quality- Software Quality Dilemma- Achieving Software Quality .

**UNIT IV**

Testing: Strategic Approach to software Testing- Strategic Issues- Testing: Strategies for Conventional Software, Object oriented software, Web Apps-Validating Testing- System Testing- Art of Debugging, Software Maintenance-Software Supportability- Reengineering- Business Process Reengineering- Software Reengineering- Reverse Engineering- Restructuring- Forward Engineering- Economics of Reengineering

**TEXT BOOKS**

1. Roger S. Pressman, "Software Engineering – A Practitioner's Approach", seventh edition, 2010.
2. Ian Sommerville, "Software Engineering" Pearson Edu, 9th edition, 2010.
3. Hans Van Vliet "Software Engineering: Principles and Practices", 2008.

**16MBTO1**

**Business skills for Biotechnologists  
(Open Elective)**

**MM:T80+IA20**

**Credit 3**

**Time: 3 Hr**

**Instructions for setting of paper:** Nine questions are to be set in total. First question will be short answer question covering whole syllabus and will be compulsory to attempt. Next eight questions will comprise of two questions each from the four sections. Student will be required to attempt four more questions selecting one from each section. Each question will be of 16 marks

**Unit - I**

Introduction: Creativity & Entrepreneurial personality and Entrepreneurship in Biotechnology, Concept and theories of Entrepreneurship, Entrepreneurial traits and motivation, Nature and importance of Entrepreneurs, Government schemes for commercialization of technology (e.g. Biotech Consortium)

**Unit - II**

Project management: Search for a business idea, concept of project and classification, project identification, project formulation, project design and network analysis, project report, project appraisal.

**Unit - III**

Financial analysis: Ratio analysis, Investment process, Break even analysis, Profitability analysis, Budget and planning process.  
Sources of finance: Source of development finance, Project financing, Institutional financing to Entrepreneurs, Financial institutions, Role of consultancy organizations.

**Unit - IV**

Marketing channels: Methods of marketing, marketing channels, Marketing institutions and assistance.

Biotech enterprises: Setting up Small, Medium & Large scale industry, Quality control in Biotech industries, Location of an enterprise, steps for starting a small industry, incentives and subsidies, exploring export possibilities.

**Text/References:**

1. Innovation and entrepreneurship in biotechnology: Concepts, theories & cases by D. Hyne & John Kapeleris, 2006.
2. The Business of Biotechnology: From the Bench of the Street: By Richard Dana Ono Published Butterworth- Heinemann, 1991.
3. Entrepreneurship in Biotechnology: Managing for growth from start-up By Martin Grossmann, 2003.
4. Best Practices in Biotechnology Education: By Yali Friedman, Published by Logos Press, 2008.
5. Plant Development and Biotechnology: by Robert Nicholas Trigiano, Dennis John Gray; Published by CRC Press, 2004,
6. Dynamics of Entrepreneurial Development and Management, Vasant Desai, Himalaya Publishing House, 2005.
7. Projects: Planning Analysis, Selection, Implementation & Review, Prasannan
8. Chandra, Tata Mc Graw-Hill Publishing Co.

**16MMEO1**

## **OPERATIONS RESEARCH**

**MM:T80+IA20**

**Credit 3**

**Time: 3 Hr**

**Instructions for setting of paper:** Nine questions are to be set in total. First question will be short answer question covering whole syllabus and will be compulsory to attempt. Next eight questions will comprise of two questions each from the four sections. Student will be required to attempt four more questions selecting one from each section. Each question will be of 16 marks

### **Unit I**

**Introduction** : Definition, role of operations research in decisionmaking, applications in industry. Concept on O.R.model building - Types & methods. Linear Programming (LP) : Programming definition, formulation, solution - graphical simplex Gauss Jordan reduction process in simplex methods, BIG-M methods computational, problem.

### **Unit II**

**Deterministic Model** : Transportation model-balanced & unbalanced; orth west rule, Vogel's Method, Least cost or matrix minimal, Stepperg stone method, MODI methods, degeneracy, assignment, travelling salesman, problem.

Advanced Topic of LP : Duality, PRIMAL-DUAL, reactions-its solution, shadow price, economic interpretation, dual simplex, post-optimality & sensitivity analysis, problems.

### **Unit III**

**Waiting Line Models** : Introduction, queue parameters, M/M/1 queue, performance of queuing systems, applications in industries, problems. Unit VI Project Line Models : Network diagram, event activity, defects in network, PERT & CPM, float in network, variance and probability of completion time, project cost-direct, indirect, total optimal project cost by crashing of network, resources leveling in project problems. Coupling Principal Coordinates, Free Vibrations in Terms of Initial Conditions, Forced Harmonic Vibrations, Vibrations Absorber, Centrifugal Vibration Absorber, Vibration Damper.

### **Unit IV**

**Multi degrees of Freedom systems and Numerical Methods:** Introduction Influence Coefficients, Stiffness Matrix, Flexibility Matrix, Naural frequancies and Normal Modes, Orthpgonality of Normal Modes, Dunkerley's Equation,Method of Matrix Iteration, The Holzer Type Problem Geared and Branched Systems, Beams.

**Normal Mode Vibrations of Continuous System** : Vibrating String, Longitudinal Vibrations of Rod, Torsional Vibrations of Rod, Lateral Vibrations of Beam.

**Text Books :-** 1. Theory of Vibration with Aplications W.T. Thomson, Prentice Hall of India.

2. Mechanical Vibration : G.K. Grover and S.P. Nigam, Nem Chand and Sons.

**References Books :** 1. Theory and Practice of Mecahnical Vibrations J.S. Rao and K. Gupta , Wiley Eastern Ltd.

2. Mecahnical Vibrations S.S. Raop, Addision - Wesley Publishing Company.

## OPEN ELECTIVE COURSE

### 16ECE01 MULTIMEDIA COMMUNICATION

MM:T80+IA20

Credit 3

Time: 3 Hr

**Instructions for setting of paper:** Nine questions are to be set in total. First question will be short answer question covering whole syllabus and will be compulsory to attempt. Next eight questions will comprise of two questions each from the four sections. Student will be required to attempt four more questions selecting one from each section. Each question will be of 16 marks

#### UNIT I

**Multimedia & Information Representation Multimedia Introduction:** multimedia networks, Telephone networks, Data networks, Broadcast television networks, Integrated services digital networks, Broadband multiservice networks, types of Multimedia Applications: Movie on Demand, Near Movie on Demand, communication modes, multipoint conferencing, network QOS, Application QOS. Multimedia Information Representation: Digitization principles, Encoder Design, Decoder Design, Unformatted Text, Formatted Text, Hypertext, Images: Graphics, Digitized documents, Digitized pictures; Audio: PCM speech, CD-quality audio, Synthesized audio; Video: Broadcast television, Digital video, PC video, video content.

#### UNIT II

**Text and Image Compression Compression Principles & Text Compression:** Compression Principles: Source encoders and Destination decoders, Lossless and lossy compression, Entropy encoding, Source encoding; Text Compression: Static Huffman coding, Dynamic Huffman Coding, Arithmetic Coding. Image Compression: Graphics Interchange Format, Tagged image file format, digitized documents, digitized pictures.

#### UNIT III

**Audio and Video compression:** Audio Compression: Differential Pulse Code Modulation, Adaptive Differential PCM, Adaptive predictive coding, Linear Predictive coding, Code excited LPC, Perceptual Coding, MPEG Audio coders, Dolby audio coders Video compression: video compression principles, Motion Pictures Expert Group (MPEG), MPEG1, MPEG2.

#### UNIT IV

**INTERNET AND DESIGNING FOR THE WORLD WIDE WEB The internet and multimedia: The internet, Internetworking:** Internet addresses, connections, The Bandwidth Bottleneck, Internet services, MIME-Types, The world wide web and HTML, Dynamic web pages and XML, multimedia on the web, Tools for the World Wide Web: web browsers, web servers, web page makers and site builders, plug-ins and delivery vehicles. Designing For The World Wide Web: Developing for the web: HTML is a Markup Language, The Desktop Workspace, The Small Device Workspace, nibbling, Text for the web: making columns of text, flowing text around images; images for the web: GIF and PNG Images, JPEG Images, Using Photoshop, Backgrounds, clickable buttons, Client side image maps, sound for the web, animation for the web.

Text Books:

1. Fred Halsall, Multimedia Communications , Pearson
2. Tay Vaughan, Multimedia, making it work Eighth edition, Tata McGraw-Hill Edition

Reference Books

1. Rao, Bojkovic & Milovanovic, Multimedia Comm. System: Technology , Std. &Network , PHI
2. JohnF. Koegel Bufod, Multimedia Systems , Addison Wesley, Edition. 2000

**DEPARTMENT OF ZOOLOGY  
M. Sc. ZOOLOGY**

**Course no.: 16Z0001**

**Semester- II Course Title: Applied Zoology**

**MM: T80+IA20**

**Time: 3 Hr**

Note: There shall be seven questions in total. One question will be compulsory (short answer type) covering the entire syllabus and remaining six questions will be set two from each unit. Students are required to attempt compulsory question and 04 more questions selecting at least selecting one from each unit.

**Unit-I**

Host – Definitive and intermediate, Parasitism, Symbiosis, Commensalism, Reservoir.  
Transmission, prevention and control of diseases: Tuberculosis and Swine flu  
Principles and applications of ECG, MRI, PET, and CAT.

**Unit-II**

Life history and pathogenesis of *Plasmodium* sp.  
Life history, Medical importance and control of *Aedes* sp.  
Life history, pathogenesis and control of *Taenia* sp.  
Principles and applications of brain activity recording, and pharmacological testing.

**Unit-III**

Preservation of gametes in animal and artificial insemination.  
Principles and management of Poultry.  
Introduction and management of pisciculture  
Genetic improvement in animals; Induced breeding in aquaculture.

**\*As per SOE Zoology**

**\*\* Proposed maximum marks and subject to change in uniformity with other faculties of university**

**List of Recommended Books**

1. Dent, D. Insect Pest Management
2. Hill, D.S., Timber Press. Agricultural Entomology
3. David, B. V. & Ananthkrishnan. General and Applied Entomology . T. N., Tata McGraw-Hill Publishing.
5. Asa C. Chandler, Clark P. Read, Introduction to Parasitology, John Wiley and Sons., Inc., New York.
6. Thomas W.M. Cameron, Parasites and Parasitism, Billing and Sons Ltd. London,
7. Elmer R. Noble, Glenn A. Noble; Parasitology: The Biology of Animal Parasites, Lea and Febiger, Washington.
8. R.P. Hall, Protozoology, Prentice-Hall, Inc. Englewood Cliffs. N.J. Charles E. Tuttle Company, Tokyo
9. E.O. Wilson. The Diversity of Life (The College Edition), W.W. Northern & Co.
10. Molecular Biology of the Cell, B. Alberts, D. Bray, J. Lewis, M. Raff, K. Roberts and J.D. Watson. Garland Publishing Inc., New York.
11. Molecular Biology and Biotechnology. A comprehensive desk reference, R.A. Meyers (Ed.), VCH Publishers, Inc., New York.
12. Molecular Cloning: a Laboratory Manual, J. Sambrook, E.F. Fritsch and T. Maniatis, Cold Spring Harbor Laboratory Press, New York.
13. Gray's Clinical Neuroanatomy by Mancall **New Medical Pharmacology at a Glance (7th Ed.)**
14. Oxford Handbook of Neurology



**M.D.U., ROHTAK  
W.E.F.2018-19**

**A) Open Elective Courses**

Students of all PG programmes under CBCS (w.e.f. 2018-19) are required to study one open elective course in each of the 2<sup>nd</sup> and 3<sup>rd</sup> Semesters for 2-Years Programmes and in each of the 4<sup>th</sup> and 5<sup>th</sup> semesters for 3-Years Programmes. They may choose any one of the following courses (excluding the courses offered by the departments of their own subjects, if not stated otherwise).

**Open Elective Courses of 3<sup>rd</sup> Semester:-**

Sr. No.	Nomenclature of the course	Course Code	Offered by the Department
1.	Computer Aided Drug Design	16BINO2	Bioinformatics
2.	Principles and Applications of Agriculture Biotechnology-II	16CBTO2	Biotechnology
3.	Principles and Applications of Biotechnology-II	16CBTO4	Biotechnology
4.	Human Health & Nutritional Disorders	16BCHO2	Bio-Chemistry
5.	Plants: Source of Food and Health	17BOTO2	Botany
6.	Fundamental of Income Tax	16COMO1	Commerce
7.	Study of War	16DSS22OE2	Defence & Strategic Studies
8.	Principles of Economics	16ECOO2	Economics
9.	Trends and Concerns of Teacher Education	16EDUO2	Education
10.	Indian Literature in Translation - II	18ENGO2	English
11.	Disaster Management	16ENVO2	Environmental Science
12.	Food Fundamentals	16FTEO2	Food Technology
13.	Forensic Science	16GENO2	Genetics
14.	Introduction of Geography	17GEOO1	Geography
15.	Sources of Geographical Data	17 GEOO2	Geography
16.	Bhartiya Sahitya	16HNDO1	Hindi
17.	Survey of Sources of Indian History	16HISO2	History
18.	Housekeeping & Interior Design	18MHMCTO2	IHTM
19.	Fundamentals of Marketing	16IMSO2	IMSAR
20.	New Media	18JRMO2	Journalism
21.	Constitutional Law	16LAWO2	Law
22.	Information Sources and Literacy	16LISO2	Library & Information Science
23.	Statistical Tools using SPSS	16MATO3	Mathematics
24.	MATLAB	16MATO4	Mathematics
25.	Principles of Medical Biotechnology II	16MBTO2	Medical Biotechnology
26.	Microbes for health and wealth	18MCBO2	Microbiology
27.	Sources of Energy-II	16PHYO2	Physics

28.	Environment Protection Administration	16PUBO2	Public Administration
29.	Natural and Manmade Disaster	16POLO2	Political Science
30.	Ancient Indian Ethics	18SKTO2	Sanskrit
31.	Indian Society	16SOCO2	Sociology
32.	Optimization Techniques	16STAO3	Statistics
33.	Wild Life and Conservation	16ZOOO2	Zoology

**CENTRE FOR BIOINFORMATICS  
M. D. UNIVERSITY, ROHTAK**

**CBCS-SCHEME OF EXAMINATION (M.Sc. -Bioinformatics)-2016-17 onwards**

**Course Title: Computer Aided Drug Design**

**Credit: 3 0 0**

**Course Code: 16BINO2**

**MM. Th 80+ IA 20**

**Time: 3 Hours**

Note: In all 7 questions are to be set, Question No. 1 is compulsory and to be set covering entire Syllabus. 6 questions will be set with two questions from each unit. Students are required to attempt one compulsory question and 4 other questions, *i.e.*, selecting atleast one from each unit.

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**UNIT I**

Introduction to pharmacogenomics and pharmagenetics, clinical trials in pharmagenomics, polymorphism of CYP450 enzymes affecting drug response, role of SNP in pharmacogenomics, The multi Drug Resistance proteins: drug carriers affecting drug response.

**UNIT II**

Basis of Drug Pharmacokinetics and Pharmacodynamics, molecular descriptors, QSAR methodologies 3D QSAR. Structure based drug designing, Ligand based drug designing, Different docking methodologies, success stories in docking.

**UNIT III**

Pharmacophore modeling, Pharmacophore generation- (Hiphop and HypoGen theories). Combinatorial libraries, High thoughtput screening, Virtual screening, Lipinski's rule of five and its applications. Chemoinformatics: Introduction, Chemical Database( ACD,MDDR and WDI), Application of Chemoinformatics in CADD.

**M.Sc Agriculture Biotechnology**

**Semester-III**

**Course Title: Principles and Applications of Agriculture Biotechnology-II**

**MM. Th 80+IA 20**

**Time: 2 h**

**Course Code No. 16CBTO2**

**NOTE:** There shall be seven questions in total. Question No.1 will be compulsory (short answer type) covering the entire syllabus and remaining six questions will be set two from each unit. Students are required to attempt four questions in all by selecting at least one from each unit.

**Theory**

#### **UNIT I**

Gene Cloning and DNA Analysis in Agriculture: Methods in Molecular Cloning, Transformation of DNA: Chemical method and Electroporation; Gene delivery: Microinjection, eletroporation, biolistic method (gene gun), liposome and virus mediated gene delivery, *Agrobacterium* mediated gene delivery.

#### **UNIT II**

Development of transgenics for abiotic & biotic stress tolerance, Plants that make their own insecticides - The  $\delta$ -endotoxins of *Bacillus thuringiensis*, Herbicide resistant crops (roundup ready crops), Gene subtraction: RNA silencing, CRISPER technology.

#### **UNIT III**

Genetically modified Crops: safety, risks and public concerns: GM foods-merits and demerits, Safety tests on commercial GM crops (GM maize, GM potatoes, GM rice, GM cotton, peas), Allergenicity studies, Public concerns-global scenario, Consumer's attitude towards GM foods, GM foods: issues with respect to India. Traceability of GMOs in the food production chain, Environmental and Safety concerns with selectable markers, The terminator technology, The possibility of harmful effects on the environment and humans.

#### **Suggested readings:**

1. Hou CT, Shaw JF (2009) Biocatalysis and agricultural biotechnology, CRC Press, USA
2. Brown, TA (2010) Gene Cloning and DNA Analysis: An Introduction, Sixth Edition. A John Wiley & Sons, Ltd., Publication, Germany.
3. Bhojwani SS, Soh WY (2005) Agro biotechnology and plant tissue culture, Oxford Press.
4. Clark DP, Pazdernik NJ (2009) Biotechnology: Applying the Genetic Revolution. Elsevier Academic Press, USA.
5. Primrose SB, Twyman RM (2006) Principles of Gene Manipulation and Genomics, 7<sup>th</sup> Edition. Blackwell Publishing, Oxford, U.K.
6. Kumar HD (2005) Agricultural biotechnology, Daya Publ House, India
7. Newbury HJ (2009) Plant molecular breeding, John Wiley and Sons., USA.
8. Kumar A, Shekhawat NS (2009) Plant tissue culture and molecular markers: their role in improving crop productivity (IK International)
9. Das HK (2010) Biotechnology, 4<sup>th</sup> Edition, Wiley India Pvt. Limited, India
10. Bawa AS and Kumar A (2013) Genetically modified foods: safety, risks and public concerns. J Food Sci Technol. 50(6): 1035–1046.

**CourseCode No. 16CBTO4**

**NOTE:** There shall be seven questions in total. Question No.1 will be compulsory (short answer type) covering the entire syllabus and remaining six questions will be set two from each unit. Students are required to attempt four questions in all by selecting at least one from each unit.

**UNIT I**

Production of proteins from cloned genes: Cloning vectors and expression vectors, primer designing, open reading frame (ORF) and DNA Restriction pattern analysis, *E. coli* expression vectors, criteria for choosing different vectors, importance of different *E. coli* strains for expression, optimization of expression of recombinant proteins in *E. coli*, Codon optimization.

**UNIT II**

General problems with the production of recombinant proteins in *E. coli*, Dealing with insoluble proteins, Recombinant protein production in Eukaryotic cells. Processing, purification and characterization of recombinant proteins. Applications of recombinant protein production.

**UNIT III**

Study of Genomes: Genome annotation, identifying the genes in a genome sequence, determining the function of an unknown gene. Study of gene expression and regulation: identification of gene transcript, identifying protein binding sites on a DNA molecule: methods to study DNA protein interactions. Identification of promotor and control sequences, Analysing and comparing transcriptome, *in vitro* transcription, studying and comparing proteome: 2DE, MudPIT, LC-MS. Protein-Protein interactions (PPIs).

**Suggested readings:**

6. Brown, TA (2010) Gene Cloning and DNA Analysis: An Introduction, Sixth Edition. A John Wiley & Sons, Ltd., Publication, Germany.
7. Clark DP, Pazdernik NJ (2009) Biotechnology: Applying the Genetic Revolution. Elsevier Academic Press, USA.
8. Primrose SB, Twyman RM (2006) Principles of Gene Manipulation and Genomics, 7<sup>th</sup> Edition. Blackwell Publishing, Oxford, U.K.
9. Wiley JM, Sherwood LM, Woolveron CJ (2008) Prescott, Harley and Klein's Microbiology. McGraw Hill Higher Education.
10. Primrose SB and Twyman RM (2008) Genomics: Applications in human biology. Blackwell Publishing, Oxford, U.K.

## 16BCHO2 :Human Health and Nutritional Disorders

**Note:** Question 1 will be compulsory and will cover the entire syllabus in the form of short questions. Question 2 to 7 will include two questions from each unit and candidate will have to attempt one question from each unit. Overall, four questions to be attempted. All questions to carry equal marks i.e. 20.

**MM. Th 80+IA 20**

### Unit I

*Food Physiology:* Concept of balanced diet and energy content of foods; Basal and resting metabolism- influencing factors, Absorption of carbohydrates, lipids, proteins, nucleic acids, minerals and vitamins.

*Common metabolic disorders:* Diabetes mellitus, disorders of HDL-cholesterol, LDL-cholesterol, triglycerides, phenylketonuria, albinism.

*Antioxidants:* Free radicals: definition, formation in biological Systems. Natural anti-oxidants, defense against free radicals. Role of free radicals and antioxidants in health and disease.

### Unit II

*Vitamins:* Dietary sources, biochemical functions and specific deficiency diseases associated with fat and water soluble vitamins; Hypervitaminosis symptoms of fat-soluble vitamins.

*Minerals:* Dietary sources and deficiency disorders of dietary calcium, phosphorus, magnesium, iron, iodine, zinc and copper.

*Malnutrition and blood disorders:* Etiology, clinical features, metabolic disorders and management of Marasmus and Kwashiorkor, Nutritional anemia - vitamin B<sub>12</sub>, folate and iron deficiency anemia; hemoglobinopathies and thalassemias.

### Unit III

*Obesity:* Definition, classification and biochemical basis; Genetic and environmental factors leading to obesity; Obesity related diseases and management of obesity.

*Cardiovascular disease:* Diseases of Liver, Gall bladder & Pancreas-Hepatitis, (A, B, and C), alcoholic liver disease, Gall stones, pancreatitis, Prevention and dietary management.

Clinical significance of aspartate aminotransferase, alanine aminotransferase, lactate dehydrogenase, amylase, lipase and trypsin. Diagnosis of jaundice and clinical importance of bilirubin.

**Suggested Readings for 16BCHO2: Human Health and Nutritional Disorders:**

1. Textbook of Medical Biochemistry **By** MN Chatterjea and Rana Shinde, Jaypee Brothers.
2. Review of Medical Physiology (Lange Basic Science) (Paperback) **By** William F. Ganong. Publisher: McGraw-Hill Medical
3. Clinical Biochemistry **By** Richard Luxton. Scion Publishing Ltd.
4. Principles of Medical Biochemistry: With STUDENT CONSULT Online Access (Paperback) **By** Gerhard Meisenberg and William H. Simmons. Publisher: Mosby.
5. Essentials of Food and Nutrition Vol I & II, **By** M. Swaminathan. Bangalore Printing and Publishing Co. Ltd.
6. Modern Nutrition in Health and Diseases, **By** Maurice E Shils and Vernon Robert Young, 7<sup>th</sup> Ed., Pub: Lea &Febiger.
7. Handbook of Nutrition and Food 2<sup>nd</sup> Ed., **By** Carolyn Berdanier, Johanna Dwyer and Elaine Feldman, CRC Press
8. Nutritional Biochemistry (Hardcover) **By** Tom Brody. Academic Press.
9. Nutritional Biochemistry (Paperback) **By** S Ramakrishnan and S. Venkat Rao. TR Publications
10. Nutritional Biochemistry and Metabolism: With Clinical Applications (Hardcover) **By** Maria C. Linder. Publisher: Appelton and Lange

**DEPARTMENT OF BOTANY  
OPEN ELECTIVE**

**M. Sc. Botany  
(Semester-III)**

**Paper Code: 17BOTO2**

**Title of Paper: Plants: Source of Food and Health**

**Max. Marks:80**

**Internal Assessment: 20**

**Time: 3 hrs.**

Note: The examiner is required to set even questions in all. Question No. 1 will be compulsory and short answer type covering the entire syllabus. The remaining six questions will be set with two questions from each unit. The candidate will be required to attempt four questions - Question 1 and three more questions selecting one from each unit.

**Unit- I**

Agriculture: origin, history, world centres of primary diversity of domesticated plants, shifting cultivation and consequential damage to forest ecosystem, benefits and adverse consequences of green revolution, emerging problems of agriculture sector of India and their possible solutions, concept of organic farming and sustainable agriculture

**Unit- II**

Horticulture: scope, classification and importance; Important commercial horticultural crops of India and Haryana, some underutilized fruits and vegetables of Haryana, Home gardening and their relevance in present time, Factors affecting horticulture in India, Issues in post harvest management of fruits and vegetables in India, National Horticultural mission

**Unit- III**

Medicinal Plant: Diversity and distribution, General account of local plants of medicinal importance, Drugs developed from traditional medicines, Bioprospection and biopiracy of medicinal plants, Indian initiatives for promoting the use of medicinal plants, Factors affecting medicinal plants diversity, conservation and management



**(Open Elective Paper)**  
**Fundamentals of Income Tax**  
**Paper Code: 16COMO1**

**Maximum Marks: 100**

**Credits: 3:0:0**

**Time Allowed: 3 Hours**

**Theory Marks: 80**

**Internal Assessment Marks: 20**

**Note:** The examiner shall set nine questions in all covering the whole syllabus. Question No.1 will be compulsory covering all the units and shall carry 8 small questions of equal marks. The rest of the eight questions will be set from all the four units. The examiner will set two questions from each unit out of which the candidate shall attempt four questions selecting one question from each unit. All questions shall carry equal marks.

**Unit-I**

Introduction: Meaning of tax, scope, objectives, importance, Important terms-assessee, person, previous year, assessment year, income, gross total income, total/taxable income, casual income, agriculture income, company, tax evasion, tax avoidance, tax planning, tax management.

**Unit-II**

Determination of residential status and incidence of tax with reference to residential status of an individual; exempted incomes of an individual

**Unit-III**

Income from various heads (basic introduction only), clubbing of incomes, set off and carry forward of losses, Computation of gross total income and taxable income.

**Unit-IV**

Computation of tax liability of an individual; filling and filing of Income Tax Returns (ITR-I & II only).

Note:

1. The objective of this paper is to make the students familiar with the mechanism of Income Tax Law
2. The examiner is not required to ask the students to calculate income from various heads of an individual. The examiner is also required to give computed incomes from different heads in the question paper.
3. The actual amount of allowed deductions with section must be given clearly in the question.

**Suggested Readings:**

1. *Direct Taxes law & Practice – Dr. H.C.Mehrotra & Dr. S.P. Goyal, Sahitya Bhawan Publications, Agra.*
2. *Direct Taxes & Practice – Dr. V.K. Singhania Taxmann Publication.*
3. *Direct Taxes law & Practice – Dr. Bhagwati Prasad – Wishwa Prakashan, N.Delhi.*
4. *Simplified Approach to income Tax: Dr. Girish ahuja & Dr. Ravi Gupta – Sahitya Bhawan Publishes & Distributors, Agra.*

**SEMESTER-III**  
**PAPER CODE-16DSS22OE2**

**STUDY OF WAR**

**Credits: 3:0:0**  
**Time Allowed: 3 Hours**

**Maximum Marks: 100**  
**Theory Marks: 80**  
**Internal Assessment Marks: 20**

**INSTRUCTION FOR THE PAPER SETTERS**

The Question Paper will consist of five units: I, II, III, IV and V. Unit-V will be compulsory. The first Four Units will consist two questions each from the respective unit and each question will carry 16 marks. Unit V of the question paper will consist Eight short answer type questions, without any internal choice and will cover the entire syllabus uniformly. Each short answer type question will carry Two marks. The Question Paper should be set strictly according to the syllabus. Separate marks for each question should be indicated in the question paper.

**UNIT-I**

1. Nature of War:-
  - a) Definition, Scope and Causes
  - b) Evolution of War: - Feudal, Dynastic, Peoples and Modern War
  - c) Cold War: - Definition, Concept, Historical Evolution

**UNIT-II**

2.
  - a) Principal of War
  - b) Feature of Modern Warfare
  - c) Future of War

**UNIT-III**

3. Strategy, Tactics and Logistics:-
  - a) Definition of Grand Strategy, Strategy and Tactics
  - b) Distinction between Grand Strategy, Strategy and Tactics.
  - c) Types of Strategy – Strategy of Indirect Approach, Strategy of Annihilation and Strategy of Exhaustion

**UNIT-IV**

4.
  - a) Origin and Causes of World War-I
  - b) Origin and Causes of World War-II
  - c) Indo-Pak War-1971: Origin and Causes

**Recommended Books:-**

1. Howard, Micheal, "Theory and Practice of War".
2. Howard, Micheal, "The Causes of War".
3. Bernard Black, L., "War its Causes".
4. Wright, Quincy, "A Study of War, University of Chicago Press, Chicago, USA. 1965.
5. Brodie, Bernard, "Strategy in the Missile age".
6. Pees David, "Korea the Limited War".
7. Carlvon Clasewitz (ed), "Principles of War", Army Publishers, Delhi-6, 1968.
8. Lt. Gen. K.K. Nanda, "Indo-Pak War-1971" (Hindi), Parbhat Publications, Asaf Ali Road, New Delhi.

### Semester-III

#### 16ECO02- Principles of Economics (Open Elective Paper)

Max. Marks: 100  
Time: 3 Hrs.

Written Exam:80  
Internal Assessment: 20

#### Unit -1

Why study economics? The scope and method of economics; scarcity and choice; questions of what, how and for whom to produce and how to distribute output.

#### Unit-II

Indian Economy on the eve of Independence, British rule and its impact on Indian Economy, Emergence and development of Planning exercise in India – historical debates.

#### Unit-III

Trends and patterns in structure of population over time – growth rate, gender, rural-urban, literacy, regional; Structure and trends of Poverty and Inequality (interpersonal and regional); Inflation – trends, structure and causes; Unemployment – trends, structure and types.

#### Unit-IV

Trends in Agricultural Production and Productivity; Land Reforms – Genesis, Progress and current status; Green Revolution – Measures and its effects. Trends and Patterns of Industrial Sector; Changes in the structure of Indian Industry.

#### Note:

- (A) Nine questions would be set in all.
- (B) Question No. 1 based on the entire syllabus, would be compulsory. It would contain eight short answer questions of two marks each.
- (C) There would be two questions (16 marks each) from each of four units.
- (D) Candidates would be required to attend five questions ( one compulsory and selecting one from each unit.)

#### Reading List:

- D.N. Divedi: Principles of Economics, 2<sup>nd</sup> Edition, Vikas Publication House.
- R Dutta and K P M Sundaram: Indian Economy, S Chand A.N.Agarwal: Indian Economy, Problems of Development and Planning, New Age.
- Mishra and Puri: Indian Economy, Himalaya.
- Planning Commission: Twelfth Five Year Plan, Vol I, II and III, Academic Foundation.
- Government of India: Economic Survey (latest issue)

**M.Ed. (2016-18)**

**16 EDU02**  
**OPEN ELECTIVE - II (TRENDS AND CONCERNS OF TEACHER EDUCATION)**

**Time: 3 Hours**

**Credits: 3**

**Max. Marks: 100**

**(Theory: 80, Internal: 20)**

**NOTE FOR PAPER SETTER**

Paper setter will set 9 questions in all, out of which student will be required to attempt 5 questions

Q. No. 1 will be compulsory and will carry 16 marks. It will comprise of 4 short answer type questions of 4 marks each to be selected from the entire syllabus.

Two long answer type questions will be set from each of four units, out of which the students will be required to attempt one question from each unit. Long answer questions will carry 16 marks each.

All questions carry equal marks

**COURSE OBJECTIVES:**

After completing the course, the students will be able to:

Develop an idea about the structure of secondary education in India.

Understand the recommendations of different education commissions regarding secondary & Senior Secondary education commissions.

Acquaint the students with the need, scope and purpose of educational management in terms of national needs.

make aware of the importance of making right choices in life, education, vocation etc.

develop and promote understanding of basic principles, areas, importance of guidance and counseling.

make students conversant with the practices of guidance and vocational choices.

understand the concept of teacher education along with its need and scope

understand the objectives of teacher education at elementary, secondary and higher education

develop understanding about the structure, curriculum and modes of pre- service teacher education and needs of innovation in pre-service teacher education programmes describe the need, concept and scope of teacher education and historical development with special emphasis on different documents.

develop in students an understanding of the concept and philosophy of inclusive education in different contexts

develop in students an understanding of the nature and types of diverse learners

enable students to analyze the trends and issues in inclusive education

## COURSE CONTENTS

### UNIT- I

#### **Introduction to Secondary & Senior Secondary Education**

Meaning, Aims & Objectives of Secondary & Senior Secondary Education

Secondary Education in India- Historical perspectives, pre & post Independence

Recommendations of various committees and commissions: Secondary Education Commission, Kothari Commission, Programme of Action 1992, NPE 1986, Ramamurti Review Committee, Janardhan Reddy Committee, Yashpal Committee, RMSA & NCF-2005

#### **Educational Management**

Meaning, Concept & need for Educational Management at Secondary to Senior Secondary School Level

Management at Nation: MHRD, CABE, NCERT

### UNIT – II

#### **Introduction to Guidance**

Guidance Movement in India: Pre & Post Independence.

Concept, Principles & Functions of Guidance.

Types of Guidance: Educational, Vocational, Social & Personal Guidance.

Group Guidance: Meaning, Objectives, Characteristics, Advantages, Problems, Principles & Techniques.

Contemporary Models of Guidance; Mathewson Model, Sholen's Model, Chapman Model & Hoyt's Model.

#### **Introduction to Counseling**

Concept, Principles, Techniques & Procedure of Counselling.

Approaches of Counseling: Directive, Non-Directive, Eclectic Counselling.

Theories of Counseling: Freud's Psychoanalytic, Behaviouristic, Gestalt

Skills of Counseling: Building Trust, Listening, Observation & Empathy

Counselor: Characteristics, Functions & Ethics

### UNIT-III

#### **Teacher Education Introduction to Teacher Education**

Concept, Need and Scope of Teacher Education.

Historical Development of Teacher Education

Aims and Objectives of Teacher Education at:

- i) Elementary Level.
- ii) Secondary Level.
- iii) Higher Level.

Pre- Service Teacher Education: Concept, Nature, Objectives and Scope.

In-service Teacher Education; concept, Need, Objectives and areas of Professional development.

Quality Assurance in Teacher Education

## UNIT – IV

### **Inclusive Education for Children with Diverse needs**

**a) Introduction to Inclusive Education:** Definition, concept and importance of Inclusive Education.

Concept of Access, Equity, Diversity, Human Rights & Social Justice.

Readiness of School, Principles and Models of Inclusion

**b) Children with Diverse Needs**

Definition and characteristics of children with sensory (hearing, visual and physically challenged) intellectual (gifted, talented and children mentally challenged children), developmental disabilities (autism, cerebral palsy, learning disabilities), social and emotional problems, scholastic backwardness, under-achievers, slow learners and other marginal groups.

**Suggested Readings:**

- Aggarwal, J.C. (2008). Education in the Emerging Indian Society. Delhi: Shipra Publication.
- Chauhan, S. (2012). Educational Management. New Delhi: Pearson Publication.
- Sharma, R.A.(2009). Educational Administration & Management. Meerut:R Lal Book Depot.
- Vashist, S.R. (2008). Educational Administration in India. New Delhi:Anmol Publication Pvt. Ltd.
- Aggarwal, R. (2010). Elementary Guidance and Counselling , New Delhi: Shipra Publication.
- Bala, Rajni.(2007). Guidance and Counselling: Modern Review, New Delhi: Afa Publication.
- Chandra, R.(2009). Career information and Guidance and Counselling, Delhi:Isha Books.
- Gibson, R. L. & Mitchell, M. (2008). Introduction Counselling and Guidance, New Delhi: PHI Learning Pvt. Ltd.
- Kottler, J. A. & Shepard, D. S.(2008). Counselling Theories & Practices, Cenage Learning: 1st Edition.
- Rao, S N.(2006). Counselling and Guidance ,Delhi :McGraw hill Publication.
- Rao, S. N.& Hari, H. S.(2004). Guidance and Counselling,New Delhi:Discovery Pub. House.
- Saxena, A. (2006). Organization of Guidance Service ,Delhi: Rajat Publications.
- Shrivastava, K.K. (2003). Principles of Guidance & Counselling , New Delhi : Kanishka Publishers.
- Singh, R. (2002). Educational & Vocational Guidance , New Delhi : Commonwealth Publishers
- Yadav, R.H. (2012). Guidance & Counselling , New Delhi: APH Publishing Corporation
- National Curriculum Framework for Teacher Education; Towards Preparing Professional and Humane Teachers, (2009) NCTE. New Delhi.
- Mangla, S. (2000). Teacher Education: Trends and Strategies. New Delhi : Radha Publishing.
- MHRD (1986). National Policy of Education and Program of Action. New Delhi, Govt. of India.
- MHRD (1992). Program of Action. New Delhi, Department of Education, Govt. of India.
- Govt. of India (1992). Report of C.A.B.E... New Delhi: Committee Department of Education.
- Kohli, V.K. (1992). Teacher Education in India, Ambala: Vivek Publishers.
- N.I.E.P.A. (1984). Report on Status of Teachers, New Delhi.
- Sharma, R.A. (2005). Teacher Education, Meerut: Loyal Book Depot.

- Udyaveer (2006). Modern Teacher Training, New Delhi: Anmol Publications
- Ahuja. A; Jangira, N.K. (2002). Effective Teacher Training; Cooperative Learning Based Approach. New Delhi National Publishing house.
- Bartlett, L. D. and Weisentein, G. R. (2003). Successful Inclusion on for Educational Leaders . New Jersey: Prentice Hall.
- Daniels, H. (1999). Inclusive Education. London: Koegan.
- Gore, M. C. (2004). Successful Inclusion Strategies for Secondary and Middle School Teachers, Corwin Press: Sage Publications.
- Hegarty, S. & Alur, M. (2002). Education of Children with Special Needs : from Segregation to Inclusion, Corwin Press: Sage Publishers.
- Jha, M. M. (2002). School without Walls: Inclusive Education for All. Oxford: Heinemann Education.
- Karten, T. J. (2007). More Inclusion Strategies that Work . Corwin Press, Sage Publications.
- Panda, K. C. (1997). Education of Exceptional Children. New Delhi: Vikas Publications.
- Rayner, S. (2007). Managing Special and Inclusive Education , Sage Publications.
- Sharma P.L (2003). Planning Inclusive Education in Small Schools, R.I.E. Mysore





**The paper-setter will mention Units.**

**Suggested Reading**

Agarwal, Purushotam. *Kabir: Sakhi aur Shabad.*

Hess, Linda. *The Bijak of Kabir.*

Kothari,Rita. *Translating India.*

Kumar, Nand. *Indian English Drama: A Study in Myth.*

Myles, Anita. *Contemporary Indian English Drama: An Overview.*

Prasoon, Shrikant. *Knowing Sant Kabir.*

Vaudeville, Charlotte. *A Weaver Named Kabir: Selected Verses, with a Detailed.*

Biographical and Historical Introduction (French Studies in South Asian Culture and Society)

Wadikar ,Shailaja B. *Vijay Tendulkar A Pioneer Playwright.*

**Semester –III  
Open Elective**

**16ENVO2: Disaster Management  
MM. Th 80+IA 20**

Time : 3 Hours.

**Note:** 1. Seven questions will be set in all.

2. Question No. 1 will be objective covering the entire syllabus & compulsory. The remaining six questions will be set with two questions from each unit. The candidate will be required to attempt five in total, Question I and four by selecting at least one from each unit.

#### **UNIT- I**

**Disaster-** Causes and phases of disaster, Rapid onset and slow onset disasters. Nature and responses to geo-hazards, trends in climatology, meteorology and hydrology. Seismic activities. Changes in Coastal zone, coastal erosion, beach protection. Coastal erosion due to natural and manmade structures.

#### **UNIT- II**

**Floods and Cyclones:** causes of flooding, Hazards associated with flooding. Flood forecasting. Flood management, Integrated Flood Management and Information System (IFMIS), Flood control. Water related hazards- Structure and nature of tropical cyclone, Tsunamis – causes and physical characteristics, mitigation of risks.

#### **UNIT- III**

**Earthquakes:** Causes and characteristics of ground-motion, earthquake scales, magnitude and intensity, earthquake hazards and risks, Volcanic land forms, eruptions, early warning from satellites, risk mitigation and training, Landslides.

**Mitigation efforts:** UN draft resolution on Strengthening of Coordination of Humanitarian Emergency Assistance, International Decade for Natural Disaster Reduction (IDNDR), Policy for disaster reduction, problems of financing and insurance.

#### **Reference Books:**

1. Bolt, B.A. Earthquakes , W. H. Freeman and Company, New York. 1988
2. Carter, N,W. Disaster Management: A Disaster Manager's Hand Book, Asian Development Bank, Manila. 1992
3. Gautam Ashutosh. Earthquake: A Natural Disaster, Ashok Publishing House, New Delhi. 1994
4. Sahni, P.and Malagola M. (Eds.).Disaster Risk Reduction in South Asia, Prentice-Hall of India, New Delhi. 2003.
5. Sharma, V.K. (Ed.). Disaster Management, IIPA, New Delhi. 1995.
6. Singh T. Disaster management Approaches and Strategies, Akansha Publishing House, New Delhi. 2006
7. Sinha, D. K. Towards Basics of Natural Disaster Reduction, Research Book Centre, New Delhi. 2006
8. Smith, K. Environmental Health, Assessing Risk and Reduction Disaster, 3rd Edition, Routledge, London. 2001 21

17FTEO2

## Food Fundamentals

There will be seven questions in all. The first question comprising of short answer type questions covering the entire syllabus will be compulsory. The remaining eight questions will comprise of a set of two questions from each unit and the candidate will be required to attempt question 1 and four more questions selecting at least one from each unit.

MM: Th 80+IA 20  
Time: 3h

### Unit I. Food nutrients and balanced diets

Characteristics of basic food groups and their contribution to the diet, Food functions, Nutrients: macronutrient (vitamins, carbohydrates, proteins), micronutrients (minerals), balanced diet: definition, factors affecting balanced diet

### Unit II. Food processing and preservation

Objectives of cooking food and cooking methods: different cooking methods, effect of different methods of cooking on nutritive value of food. Food preservatives: chemical preservatives, salt, sugar, oil as food preservative. Food preservation by drying, dehydration, cooling/freezing and thermal processing including sterilization, blanching, pasteurization.

### Unit III. Food packaging and labeling

Food packaging and its functions, food packaging & labeling, packaging types, understanding labelling rules & regulations, nutritional labeling: serving sizes, daily values, health claims etc., labelling requirements for pre-packaged foods

### Recommended readings:

1. Potter, N.N and Hotchkiss, J.H. Food Science. CBS Publishers and distributors
2. Vieira, E.R. Elementary Food Science. Chapman and Hills publication
3. McWilliams, M. Food Fundamentals. Pearson India Education Services (Indian edition)
4. Training manual for food safety regulators, Volume I. Food safety and Standards Authority of India.

## **Open Elective Paper (offered by Department of Genetics)**

**Paper Code: 16GENO2**

**FORENSIC SCIENCE**

**Credits: 3**

**Internal Assessment Marks: 20**

**Time: 3hrs**

**Max. Marks: 80**

### **Instructions**

There will be a total of seven questions. Question No. 1 will be compulsory and shall contain ten short answer type questions without any internal choice and it shall cover the entire syllabus. The remaining six questions will include two questions from each unit. Students will be required to attempt one question from each unit.

### **Unit –I**

Forensic Science: Definition of Forensic Science, Role of the Forensic Laboratory, History and Development of Forensic Science in India, Branches of Forensic Science. Administration and Organizational Setup: Brief introduction to DFSS, CFSL, GEQD, SFSL, RFSL, MFSL, FPB, NICFS, CDTS, NCRB and BPR&D. Educational qualifications and employment in Forensic Science Laboratory.

### **Unit –II**

Forensic Evidences: Concise of Forensic Physical, Biological, Chemical and Psychological Sciences, types of cases and evidences involved. Laws and Principles of Forensic Science: Law of Exchange (Locard), Law of Individuality, Law of Comparison, Law of Progressive Changes and Law of Probability. Criminalistics: Definition, Securing & Searching methods, Documentation of crime scene. Methods of collection of forensic evidences, Role of Police at the Crime scene, scientific help at crime scene, handling of various types of crime scenes by police.

### **Unit –III**

Basics of signature and handwriting comparison, fake currency note examination. Classification of Fingerprint patterns, cases involved methods of development and comparison of fingerprints. Forensic expert, Admissibility of Forensic testimony in Court of law, Frye and Daubert standards, Cross Examination, Ethics in Forensic Science. Accreditation of Forensic laboratories by NABL.

### **Suggested Books:**

1. James, S.H and Nordby, J.J. (2003) Forensic Science: An introduction to scientific and investigative techniques CRC Press,
2. Saferstein : Criminalistics (1976) Prentice Hall Inc., USA.
3. Sharma, B.R. (1974) Forensic Science in Criminal Investigation and Trials, Central Law Agency, Allahabad, 1974.
4. J A Siegel, P.J Saukko (2000) Encyclopedia of Forensic Sciences Vol. I, II and III, Acad. Press

**M.A. Geography Semester-III Session 2017-18 Onwards**  
**17GEO01: INTRODUCTION TO GEOGRAPHY**

Credit: 03 (2+1+0)

End Semester Exam:

80 marks

Internal Assessment: 20 marks

Total: 100 marks

Time: 3 hrs.

**Learning Objectives:**

The course on **Introduction to Geography** will discuss the basic concepts in geography. It is specifically designed to give an exposure of geographical concepts to students other than formal students of geography.

**Learning Outcomes:**

Student will be able to understand the geographical concepts which are relevant in day to day life.

**Unit-I**

Solar system , solar and lunar eclipse; Earth- shape, movements, formation of day/nights and seasons ; location-latitude-longitude, longitude and time zones.

**Unit-II**

Interior of earth; vulcanism and earthquakes; plate tectonics; weathering and erosion; brief introduction to major landforms.

**Unit-III**

Weather and climate: factors affecting and distribution; composition and structure of atmosphere; atmospheric pressure and global winds; introduction to Monsoon.

**Unit-IV**

Relief of oceans; oceanic salinity; circulation of oceanic water; currents of Atlantic, Pacific and Indian Oceans.

**Note (i):** Open Elective to be chosen from the basket of Open Electives (OEs) provided by the University.

(ii) The question paper will have five units. First four units of question paper will contain two questions from each unit of the syllabus. Candidate(s) are required to attempt one question from each unit. The unit five shall be compulsory and shall contain eight short answer type questions covering entire syllabus. All questions carry equal marks.

**Recommended Readings:**

Leong, Goh Cheng.,2015, *Certificate Physical and Human Geography*, Oxford University Press, New Delhi.

Getis [Arthur and Bjelland Mark and Getis Victoria.](#), 2014,*Introduction to Geography*, McGraw Hill Education.

Singh, Savinder., 2006, *Physical Geography*, Pravalika Publications, Allahabad.

Strahler Alan and Strahler Aurther., 2005, *Introducing Physical Geography*, John Wiley & Sons, Inc.

## **M.A. Geography Semester-III Session 2017-18 onwards**

### **17GEOO2: SOURCES OF GEOGRAPHICAL DATA**

Credit: 03(2+1+0)

End Semester Exam: 80

marks

Internal Assessment: 20

marks

Total: 100 marks

Time: 3 hrs.

#### **Learning Objectives:**

The objective of the course is to apprise the students about the various sources of geographical data and its importance in the field of geography.

#### **Learning Outcomes:**

Students shall learn about the significance of geographical data, various sources related to physical and cultural environments, households, population, assets, facilities, building materials and policy interventions.

#### **Unit - I**

Nature and Main Sources of Geographical Data: Place Names, Census of India, Field Studies.

#### **Unit - II**

**Place Names** (Based on Physical and Cultural Environments).

**Census of India: Primary Census Abstract:** (Number of Households, Population, Sex, 0-6 Years Population, Scheduled Castes and Scheduled Tribes Population, Literate, Workers, Main Workers, Marginal Workers (Cultivators, Agricultural Labourers, HHI, Other Workers and Non -Workers and Non- Workers in respect of Total, Rural and Urban Population).

#### **Unit-III**

**Census of India: Household Data:** Condition of Household, Availing Banking Services, Availability of various Assets, Pre- dominant materials of Roof, Wall and Floor, Sources of Drinking Water and Location, Lighting, Availability of Latrine Facility, Types of fuel for Cooking.

#### **Unit-IV**

**Census of India: Village Directory** ( Area. Population, Availability of Educational, Medical, Postal, Drinking Water, Communication Facilities, Land Use Pattern.

**Note (i):** Open Elective to be chosen from the basket of Open Electives (OEs) provided by the University.

(ii) The question paper will have five units. Each of the first four units of question paper will contain two questions from each unit of the syllabus. Candidate(s) are required to attempt one question from each unit. The unit five shall be compulsory and shall contain eight short answer type questions covering entire syllabus. All questions carry equal marks.

#### **Recommended Readings:**

Census of India (2011): Instruction Manual for House Listing and Housing Census, Ministry of Home Affairs, Government of India, New Delhi.

Census of India (2011): Primary Census Abstract, India, CD, New Delhi.

Census of India (2011): Village Directory, District Census, CD, New Delhi.

ऑपन इलेक्टिव  
भारतीय साहित्य – III

Paper Code: 16HND01  
समय : 3 घण्टे

पूर्णांक : 100 अंक  
आंतरिक मूल्यांकन : 20 अंक  
लिखित परीक्षा : 80 अंक

खण्ड क

भारतीय साहित्य की सैद्धांतिक अवधारणा  
भारतीय साहित्य का स्वरूप  
भारतीय साहित्य के अध्ययन की समस्याएं  
खण्ड ख

पाठ्य विषय

दीवान-ए-गालिब, संपा0-अली सरदार जाफरी, राजकमल प्रकाशन, नई दिल्ली।

(i) निर्धारित गजलें :

ये न थी हमारी किस्मत	21
कोई उम्मीद बर नहीं आती	162
दिले नादां तुझे हुआ क्या है	163
हजारों ख्वाहिशें ऐसी	220

(ii) रवीन्द्रनाथ की कहानियाँ (खण्ड 1), अनु0-रामसिंह तोमर, साहित्य अकादमी, नई दिल्ली

पाठ्यक्रम में निर्धारित कहानियाँ-  
पोस्टमास्टर, काबुलीवाला, नष्टनीड़

(iii) 'खामोश अदालत जारी है' (नाटक) : विजय तेंदुलकर

(iv) संस्कार (उपन्यास) : यू0 आर0 अनंतमूर्ति

खण्ड ग

आलोच्य विषय

गालिब की गजलों का काव्य-सौष्टव

रवीन्द्रनाथ टैगोर की कहानियाँ-पाठ्यक्रम में निर्धारित कहानियों की मूल संवेदना एवं चरित्र चित्रण पर आधारित प्रश्न

'खामोश अदालत जारी है' : नाटक की मूल संवेदना, प्रमुख पात्रों का चरित्र-चित्रण, पितृसत्तात्मक व्यवस्था पर व्यंग्य, रंगमंच की दृष्टि से नाटक

संस्कार : उपन्यास का मूल प्रतिपाद्य, नामकरण, प्रमुख पात्रों का चरित्र चित्रण, उपन्यास का शिल्प-पक्ष

सहायक ग्रंथ :

- 1 बंगला साहित्य की कथा : हिंदी साहित्य – सुकुमार सेन, हिंदी साहित्य सम्मेलन प्रयाग सं० 2009
- 2 रवीन्द्र कविता कानन – सूर्यकांत त्रिपाठी निराला, राजकमल प्रकाशन, नई दिल्ली–1955
- 3 बंगला साहित्य का इतिहास, सुकुमारसेन, साहित्य अकादमी, नई दिल्ली–1970
- 4 फोर्ट विलियम कॉलेज, लक्ष्मीसागर वार्षीय, इलाहाबाद विश्वविद्यालय, इलाहाबाद–1948
- 5 मध्यकालीन धर्म साधना, हजारीप्रसाद द्विवेदी साहित्य भवन, इलाहाबाद सं० 1013

#### निर्देश

1. खण्ड क एवं ग में से छह आलोचनात्मक प्रश्न पूछे जाएंगे जिनमें से परीक्षार्थी को किन्हीं तीन प्रश्नों का उत्तर देना अनिवार्य है । प्रत्येक प्रश्न 20 अंक का होगा। (20x3 = 60)
2. खण्ड ख में चार अवतरणों में से परीक्षार्थियों को किन्हीं दो अवतरणों की संदर्भ सहित व्याख्या करनी होगी। प्रत्येक व्याख्या के लिए 10 अंक निर्धारित है। (10x2=20)



**Paper: Survey of Sources of Indian History**  
**Paper Code: 17HISO2**

Max.Marks : 100  
Theory : 80  
I.A : 20

**Note:** Nine questions are to be set in all spreading into five units Each of the first four units shall contain two questions from each unit of the syllabus and Unit-V (Q. No. 9) which will be compulsory, shall contain eight short answer type questions (two marks each) covering the entire syllabus. The Candidates shall be asked to attempt five questions in all selecting one question from each unit including compulsory question. All questions shall carry equal marks.

**Unit – I**

**Sources of Ancient India-I**

**a) Archaeological Sources**

Stone Tools, Pottery, Coins & Inscriptions

**b) Literary Sources**

Vedic Literature, Epics (Ramayan & Mahabharat), Buddhist and Jain Sources

**Unit-II**

**Sources of Ancient India-II**

- Harsacharita, Rajtaringini
- Megasthanes, Al Beruni
- Arthashastra

**Unit-III**

**Sources of Medieval India**

- Ziauddin Barani: Fatwa-i-Jahandari
- Babur : Tuzak-i-Baburi
- Abul Fazal : Akbar Nama (3 Vols)

**Unit-IV**

**Sources of Modern India**

- Archival Records
- Private Papers: Officials and Non-Officials
- Newspapers and Periodicals

**Suggested Readings:**

- Sankalia, H.D. : Stone Age Tools, their Techniques and Uses (Pune, 1964)
- Sircar, D.C. : Indian Epigraphy, (Delhi, 1965)
- Puri, B.N. : India as Described by Early Greek Writers
- Majumdar, R.C. : Classical Accounts of India, (Calcutta, 1960)
- Pargiter, F.E. : Ancient Indian Historical Tradition, (London, 1922)
- Winternitz, M. : History of Indian Literature 3 Vols, (New Delhi-1963-67)
- Law, B.C. : India as Described in the Early Texts of Buddhism and Jainism
- Birani, Ibn-i-Hasan : Maqalat-i-Barani-Karachi, (N.D.)
- Akbar S. Ahmed : Discovering Islam: Making Sense of Muslim History and Society, (New Delhi, 1990.)
- Elliot, Sir H.M. & J. Dowson : History of India as Told by its Own Historians, 8 vols., London, (1867-77)
- Rosenthal, F. : History of Muslim Historiography, (Leiden, 1952)
- Sarkar, Jagdish Narayan : History of History Writings in Medieval India, (Calcutta,1977)
- Grewal, J.S. : Muslim Rule in India, The Assessment of British Historians, (Calcutta, 1970)
- " : Medieval India: History and Historians, (Amritsar, 1975)
- Ibn, Khaldun : Muqaddiman: An Introduction to History, Eng. Tr. Ero Franz Rosenthal, (London, 1958)
- S.P.Sen (Ed.) : Historians and Historiography in Modern India, (Bombay, 1970)
- Mukhia, Harban : Historians and Historiography During the Reign of Akbar, (New Delhi,1976)
- Philips,C.H.(ed.) : Historians of India, Pakistan and Ceylon, (London,1961)
- Publication Division, Ministry of I&B, Govt. of India : Gazetteer of India Vol.II (History & Culture)

# **Housekeeping & Interior Design**

**18MHMCTO2**

External Marks: 80

Internal Marks: 20

Credit: 3-0-0

## **Unit-1**

Introduction: Meaning and importance of Housekeeping, Responsibility of the Housekeeping department, career in the Housekeeping department. Housekeeping Department: Organizational framework of the Department (Large/Medium/Small Hotel), Attributes and Qualities of the Housekeeping staff - skills of a good Housekeeper

## **Unit-2**

Cleaning Science: Characteristics of a good cleaning agent, Types of cleaning agent, Cleaning Equipment: Types of Equipment, Characteristics of Good equipment (Mechanical and Manual)

## **Unit-3**

Interior Decoration-: Importance, Definition & Types, Classification, Principles of Design: Harmony, Rhythm, Balance, Proportion, Emphasis, Elements of Design: Line, Form, Colors, Texture. Colours: Color Wheel, Importance & Characteristics, Classification of colors, Color Schemes. Floor Coverings & Finishing, Ceilings & their Maintenance, Wall Coverings, Windows, Lighting: Classification, Types & Importance, Applications.

## **Unit-4**

Flower Arrangement: Concept & Importance, Types & Shapes, Principles. Emerging trends and innovations in Hotel housekeeping.

**FUNDAMENTALS OF MARKETING**  
**Course Code: 16IMS02**

**MM: Th 80+IA 20**

Time: 3 hours

**Course Objective:**

This course is designed to promote understanding of concepts, philosophies, processes and techniques of managing marketing operation and to develop a feel of the market place.

**Unit -I**

Nature and scope of marketing: corporate orientation towards marketplace; building and delivering customer value and satisfaction; retaining customers; marketing environment

**Unit -II**

Analyzing consumer markets and buyer behaviour; market segmentation, positioning and targeting; tools of product differentiation; marketing strategies in the different stage of the product life cycle

**Unit -III**

New product development process; product mix and product line decisions; branding decisions; pricing strategies; managing marketing channels; wholesaling and retailing

**Unit -IV**

Advertising and sales promotion; public relations; personal selling; evaluation and control of marketing effort; web marketing; green marketing

**Suggested Readings:**

1. Kotler Philip and Keller; Marketing Management; PHI, New Delhi
2. Kotler, Philip, Kevin Keller, A. Koshy and M. Jha, Marketing Management in South Asian Perspective, Pearson Education, New Delhi
3. Kerin, Hartley, Berkowitz and Rudelius, Marketing, TMH, New Delhi
4. Etzel, Michael J, Marketing: Concepts and Cases, TMH, New Delhi
1. Dhunna, Mukesh, Marketing Management – Text and Cases, Wisdom Publications, New Delhi

**Instructions for External Examiner:** The question paper shall be divided in two sections. **Section 'A'** shall comprise of eight short answer type questions from whole of the syllabus carrying two marks each, which shall be compulsory. Answer to each question should not exceed 50 words normally. **Section 'B'** shall comprise 8 questions (2 questions from each unit). The students will be required to attempt four questions selecting one question from each unit. All questions will carry equal marks.

**DEPT. OF JOURNALISM & MASS COMMUNICATION**  
**SEMESTER – III**  
**OPEN ELECTIVE-NEW MEDIA**

**Time allowed : 3 Hours**

**Total Marks : 100**

**Max. Marks : 80**

**Internal Assessment : 20**

**Credit : 3**

*Note : The question paper will be divided into Five Units carrying equal marks i.e. 16 marks for each question. Each of the First Four Units will contain two questions and the students shall be asked to attempt one question from each unit. Unit Five shall contain eight short answer type questions without any internal choice and it shall be covering the entire syllabus. As such, all questions in Unit five shall be compulsory.*

**Unit I**

- 1.1 New Media- Introduction, Definition, Concept and Scope
- 1.2 Characteristic Features of New Media.
- 1.3 New Media and ICT (Information & Communication Technology), Convergence of Media.
- 1.4 Applications of New Media, New Media & Society, Digital learning.

**Unit II**

- 2.1 Internet as a medium of mass communication
- 2.2 History & Development of Internet, World Wide Web (WWW)
- 2.3 Computer-mediated – communication (CMC), Multimedia Web Search Engines – functions and uses.
- 2.4 Application of the Internet, especially in Journalism & Mass Communication; e-newspapers, e-magazines

**Unit III**

- 3.1 Online Journalism- Definition, meaning, concept brief history
- 3.2 Basic Elements of Online Journalism, Characteristic features
- 3.3 Status of Online Journalism, Challenges & New Trends
- 3.4 Open Source Journalism, Wikipedia, Wiki leaks, Online News Portals

**Unit IV**

- 4.1 Impact of New media, Internet, and Online Journalism
- 4.2 Social media – Definition, important social media platforms (Facebook, Twitter Instagram, You Tube, LinkedIn), Uses and applications
- 4.3 Citizen Journalism, Participatory Journalism, Blogging as a form of Online Journalism
- 4.4 Reliability, Truth and Credibility factors on new media/Social Media, Fake News, Trolling on Social media, and Values & Ethics in New Media.

**INSTRUCTIONS FOR THE PAPER-SETTER**

**Note:** The question paper will be divided into Five Units carrying equal marks i.e. 16 marks for each question. Each of the First Four Units will contain two questions and the students shall be asked to attempt one question from each unit. Unit Five shall contain eight short answer type questions without any internal choice and it shall be covering the entire syllabus. As such, all questions in Unit five shall be compulsory.

**Note 1 :** The Criteria for awarding internal assessment of 20 marks shall be as under:

A. Class test	:	10 marks.
B. Assignment & Presentation	:	5 marks
C. Attendance	:	5 marks

**LL.M. SECOND SEMESTER EXAMINATION w.e.f. Session 2016-17**

Open Elective (Constitutional Law)

PAPER CODE: 16LAWO2

MM: Th 80+IA 20

Time: 3 hours

**NOTE FOR EXAMINER/PAPER SETTER**

The question paper of each course will be divided into Five sections, each of the First Four Sections of the Question Paper will contain 2 questions respectively from Unit-1 to Unit-4 of the syllabus. The students will be required to attempt one question from each section. Section 5 of the question paper shall contain 8 short answer type questions of 3 marks each (without any choice) covering the entire syllabus. As such Section 5 will be compulsory. The examiner will be free to set the questions in problem forms based on case law.

**NOTE FOR STUDENTS( ON QUESTION PAPER)**

Attempt four questions from sections 1 to 4, selecting at least one question from each section. These questions shall carry 14 marks each. Section 5 is compulsory and each question in this section shall carry 3 marks.

**UNIT-I**

Preamble, Citizenship, Definition of State Under Art, 12. Rules of Interpretation under Art. 13

Leading Case: Mohammad Raza V State of Bombay AIR 1966 , SC 1436

**UNIT-II**

Right to Equality(Art.14), Special Provision for Weaker Sections of the Society, Reservation Polity, Fundamental Freedoms under Art.19, Freedom of Press.

Leading Case: Indira Sawhney v Union of India, AIR 1993, SC 477

**UNIT-III**

Protection in respect of conviction of offence (Art-20), Right to Life and Personal Liberty Article 21), Protection against Arrest and Detention (Art 22), Right against Exploitation (Art-23 & 24), Right to Religion (Art 25-28).

Leading Cases: Maneka Gandhi v Union of India, AIR 1978, SC 597

**UNIT-IV**

Cultural & Educational Rights of Minorities (Art.29 & 30), Right to Constitutional Remedies (Art, 32), Directive Principles of State Policy, Fundamental Duties.

Leading Case: T.M.A. Pai Foundation V State Karnataka AIR 2003 SC 355

## BOOKS RECOMMENDED

- Seervai, H.M. : Constitutional Law of India  
Hidayatullah, M. : -do-  
Tope, T.R. : -do-  
Shukla, V.N. : -do-  
Jain, M.P. : Constitutional Law  
Chander Pal : Centre State Relations and Indian Cooperative Federalism  
Chander Pal : State Autonomy in Indian Federation: Emerging Trends  
J.N.Pandey : Constitutional Law of India

## **16LISO2: Information Sources and Literacy**

**MM: Th 80+IA 20**

Time: 3Hrs.

### **Note**

The paper is divided into 4 units. The candidates are required to attempt 5 questions in all selecting 1 question from each unit (out of two internal choices). Question 1 is compulsory consisting of 8 short answer type questions spread over the whole syllabus. All questions carry equal marks.

### **Objectives**

- to provide knowledge regarding information sources;
- to impart practical knowledge to the students about the evaluation of reference and information sources; and
- to make students aware about information literacy and search strategies

### **Outcomes**

Through this course the students will come to know about the various types of information sources in print and electronic form. The students will have knowledge of various types of databases and how to evaluate them. After completion of the course, the students will know the importance of information literacy and various search strategies.

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### **Unit 1:Information Sources**

Information sources and types : documentary and non-documentary

Print information sources: primary, secondary, tertiary

Electronic information sources: primary, secondary, tertiary

Books: concept, parts: front matter, body, back matter; types

Journals: concept, types, impact factor, h-index

Theses: concept, parts

### **Unit 2:Databases**

Full text databases: Science Direct, Emerald

Abstracting and indexing databases: Medline

Citational databases: Scopus, Web of Science

Theses databases: NDLTD, Shodhganga

Open access resources: DOAJ, DOAB

### **Unit 3: Evaluation of Information Sources**

Evaluation criteria

Evaluation of following information sources (print and electronic): dictionary: Oxford groups; encyclopedia: International Encyclopedia of Social Science, McGraw Hill Encyclopedia of Science & Technology ; biographical sources: International Who's Who; yearbook: World of Learning ;statistical sources: Census of India

Evaluation of internet resources

## **Unit 4:Information Literacy**

Information literacy: meaning, definition  
Information literacy and lifelong learning  
Nature of information requirement  
Literature search  
Search strategies and techniques

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### **Suggested Readings**

- Eisenberg, Michael. *Information literacy: Essential skills for the information age*. 2<sup>nd</sup> ed. Westport Publ.: Libraries Unlimited, 2005.
- Gates, Jean Key. (1988). *Guide to the use of Libraries and Information Sources* (6<sup>th</sup>ed). New York: McGraw-Hill.
- Katz, William A. (2002). *Introduction to Reference Work: Basic Information Services*. *Introduction to Reference Work: V1*. 8<sup>th</sup>ed. New York: McGraw-Hill, 2002.
- Katz, William A. (2002). *Introduction to Reference Work: Reference Services and Reference Processes*. *V2*. 8<sup>th</sup>ed. New York: McGraw-Hill.



***Open Electives to be offered  
by  
Department of Mathematics***

<b>To be offered in 3rd Semester</b>					
<b>16MATO4</b>	MATLAB	40	--	60	1:0:2
<b>16MATO3</b>	Statistical Tools using SPSS	50	--	50	2:0:1

## 16MATO3: Statistical Tools using SPSS

**Time: 03 Hours**

**Max Marks : T50+P50**

**Credits : 2:0:1**

### **Unit – I**

Data: Qualitative and Quantitative Data, Cross-Sectional and Time series data, Univariate and Multivariate data. Scales of measurement of Data.

Frequencies, Bar charts, Pie Charts, Line Graphs, histograms, Measures of central tendency, dispersion, Skewness, Kurtosis, Box plots.

### **Unit – II**

Concepts of Linear Correlation and Regression, Multiple Regression, Normality tests, t-tests, Chi Square tests, F-test, One way and Two way ANOVA.

### **Unit – III**

SPSS Data File: Opening a data file in SPSS, SPSS Data Editor, Creating a data file, Editing and Manipulating data, Missing Values, Editing SPSS Output, Copying SPSS output, Printing from SPSS, Importing Data.

Charts and Graphs with SPSS: Frequencies, Bar charts, Pie Charts, Line Graphs, histograms,

### **Unit – IV**

Descriptive Statistics with SPSS: Measures of central tendency, dispersion, Skewness, Kurtosis, Box plots.

Statistical tests using SPSS, Correlation and Regression using SPSS, Factor analysis using SPSS.

**Note :** The question paper will consist of **five** units. Each of the first four units will contain **two** questions from unit **I , II , III , IV** respectively and the students shall be asked to attempt **one** question from each unit. Unit five will contain **eight to ten** short answer type questions without any internal choice covering the entire syllabus and shall be **compulsory**.

### **Books Recommended:**

1. Kothari, C.R., Research Methodology
2. Gupta, S.L. and Gupta, Hitesh, SPSS for Researchers, International Book House Pvt. Ltd.
3. Field, A., Discovering Statistics using SPSS, SAGE Publications.
4. Gupta, V., SPSS for Beginners, VJ Books Inc.
5. Rajathi, A. and Chandran, P., SPSS for you, MJP Publishers

### **Part-B (Practical)**

**Time: 03 Hours**

**Max Marks : 50**

There will be a separate practical paper based on the above theory paper. All practicals are required to be done using SPSS.

## 16MATO4: MATLAB

*Time: 03 Hours*

*Max Marks : T40+P60*

*Credits : 1:0:2*

### Section - I

Introduction to MATLAB Programming: Basics of MATLAB programming, Anatomy of a program, variables and assignments, data types, operators, working with complex numbers, mathematical operations, functions for input and output, good programming style.

### Section - II

Introduction to vectors in Matlab: Defining a Vector, Accessing elements within a vector, Basic operations on vectors, strings, string functions, cell array, creating cell array, Introduction to Matrices in Matlab: Defining Matrices, Matrix functions, Matrix operations, vector functions

### Section - III

Loops: for loops, while loops, Branching (conditional statements) - if statement, if else statement, else if statement, Executable files, subroutines, Built in functions and user-defined functions, function handles, function handles in m-files, inline functions.

### Section - IV

Data files: Saving and recalling data, saving a session as text, C style read/write, Graphs and plots- Polar plot, plot3, mesh, contour, contourf, Using built-in algorithms: optimization and numerical integration (areas), Root-finding.

**Note :** The question paper will consist of **five** units. Each of the first four units will contain **two** questions from unit **I , II , III , IV** respectively and the students shall be asked to attempt **one** question from each unit. Unit five will contain **eight to ten** short answer type questions without any internal choice covering the entire syllabus and shall be **compulsory**.

### Books Recommended:

1. MATLAB An Introduction With Applications 5ed, Author: Amos Gilat. Publisher: Wiley, ISBN13: 978-1118629864.
2. Insight Through Computing: A Matlab Introduction to Computational Science and Engineering by C. F. Van Loan and K.-Y. D. Fan. SIAM Publication, 2009, ISBN: 978-0-898716-91-7.
3. MATLAB Programming, Y.Kirani Singh, B.B. Chaudhari, PHI Learning, 2007, ISBN 8120330811, 9788120330818.
4. An Introduction to Matlab, Krister Ahlersten, Bookboon.com, ISBN: 978-87-403-0283-7

**M.Sc. Medical Biotechnology Semester -III**  
**Course Title: Principles of Medical Biotechnology II**

**MM. Th 80 + IA 20**

**Course Code: 16MBTO2**

**Time: 3h**

**NOTE:** The examiner is required to set seven questions in all. Question No. 1 will be compulsory and short answer type covering the entire syllabus. The remaining six questions will be set with two questions from each unit. The candidate will be required to attempt Question 1 and four more selecting at least one from each unit.

## **Theory**

### **Unit – I**

Cloning vectors- Plasmid, cosmid, phagemid, phasmid, bacteriophages YAC, BAC, HAC; Shuttle vectors; Recombinant – production, identification and selection; Restriction endonucleases, Ligases; Hybridization; Linkers and adaptors; DNA Transformation and transfection methods; Cell expression system; Human genome project

### **Unit – II**

PCR and its variant; Blotting- Southern, northern & western; Genomic and cDNA library;; DNA Footprinting ; Gene therapy, Gene knockout, Tissue engineering.

Animal Cell Culture: Introduction and Application of animal cell culture. Equipments, materials, culture vessels for animal cell culture, Primary and established cell line cultures

### **Unit – III**

Basic biology of stem cells; Types & sources of stem cells, Blood cell formation from Bone marrow stem cells, Isolation & characterizations of stem cells, Cancer stem cells, Induced pluripotent stem cells, Stem cell banking, Therapeutic application of stem cells.

## **Recommended Books**

1. R. Lanza, J. Gearhart et al (Ed), Essential of Stem Cell Biology, Elsevier Academic press.

2. R. Lanza, I. Weissman, J. Thomson, and R. Pedersen, Handbook of Stem Cells, TwoVolume, Volume 1-2: Volume 1-Embryonic Stem Cells; Volume 2-Adult & Fetal Stem Cells, 2012, Academic Press.
3. Culture of Animal Cells- A manual of basic techniques by R.I. Freshney
4. Animal Cells Culture and Media, D.C.Darling and S.J.Morgan, 1994. BIOS Scientific Publishers Limited.
5. Gene cloning and DNA analysis - An Introduction (2006) 5th edition, T.A Brown, Blackwell publisher.
6. Essential genes (2006), Benzamin Lewin, Pearson education international.
7. Genome-3 (2007) T.A Brown. Garland science, Taylor & Francis, NewYork.
8. Principles of gene manipulation and Genomics (2006) 7th edition, S.B Primose and R.M Twyman, Blackwell publishing.
9. Principles of Genetic Engineering (2009), Mousumi Debnath, pointer publisher, Jaipur.
- 10.Molecular Biotechnology-Principles and Applications of Recombinant DNA (2003) 3rd edition, Bernard R Glick and Jack J pasternak. ASM press, Washington.
- 11.Human Molecular Genetics (2004) 3rd edition, Tom Strachan & Andrew P Read, Garland science.

(SEMESTER-III)

**Open Elective: 18MCBO2 : Microbes for health and wealth**

***Time: 03 Hours***

**MM. Th 80+IA 20**

**Time: 2 h**

***Credits : 3:0:0***

**Note: The question paper will consist of 9 questions. Students will have to attempt 5 questions in total - Question no. 1 will comprise of short answer questions covering the entire syllabus and will be compulsory. Two questions to be set from each Unit and students will have to attempt one from each Unit.**

**Unit I**

Commercial Microbial Products; Introduction to bioprocess development- upstream development, downstream process, Preservation and improvement of industrially important microorganisms, Strain development by mutagenesis, protoplast fusion and Genetic engineering.

**Unit II**

Raw materials and media formulation for microbial culture; batch, fed batch and continuous mode of bioprocess, Types of Bioreactors and their applications: Stirred tank bioreactor & Specialized bioreactors.

**Unit III**

Downstream process, Choice of bioprocess plant location; Methods of estimation of Capital Cost and Operational costs of bioprocess plant, Good Lab Practices (GLP) and Good Manufacturing Practices (GMP).

**Unit IV**

Introduction to Bioentrepreneurship; Factors necessary for Entrepreneurship; Attributes in an Entrepreneur; Market Assessments; Managing Technology transfer and Intellectual property in biotechnology in India, Licensing of Biotechnological invention, Funding agencies in India, Basics of Patents- Types of patents; Filing of a patent application.

**Suggested readings:**

1. Handbook of Bioentrepreneurship by **Patzelt**, Holger, **Brenner**, Thomas (Eds.) Publisher:
  2. SpringerBiotechnology. A Textbook of Industrial Microbiology, by W. Crueger and A. Crueger. Publisher: Sinauer Associates.
  3. Industrial microbiology by G. Reed, Publishers: CBS
  4. Bioprocess Engineering Principles by P. Doran. Publisher: Academic Press.
- Biochemical Engineering Fundamentals by J.E. Baily and D.F. Ollis. Publisher: McGraw Hill

**M.Sc. Physics Semester III**  
**Open Elective – II**  
**Sources of Energy –II**

**PAPER CODE: 16PHYO2**

Theory Marks: 80  
Internal Assessment: 20  
Time: 3 hours

**Unit I**

**Bio-mass:**

Introduction of biogas, Availability of bio-mass and its conversion theory, classification of biogas plants, principle & working of floating drum plant & fixed dome type plant- advantages & disadvantages. Biogas from plant waste, community biogas plants, utilization of biogas.

**Unit II**

**Ocean Thermal Energy** Availability, theory and working principle, performance and limitations.

**Wave and Tidal Wave:**

Principle, working, performance and limitations.

**Unit III**

**Petroleum and Coal energy**

Petroleum, origin, composition, production, extraction, octane number, kerosene, LPG, lubricants natural gas, physical properties and uses of coal, generis of coal, molecular structure, determination of fixed carbon content, coal for generation of electricity, zero emission power plants, coal reserves and mining.

**Unit IV**

**Nuclear Energy**

Nucleus and its constituents, charge mass, isotopes, isobars, mass defect, binding energy and nuclear stability, radiation and nuclear reactions.

Nuclear fission, chain reaction,  $U^{235}$ ,  $U^{238}$ , controlled nuclear fission and nuclear reactors, fast breeder reactor, nuclear fusion, condition for nuclear fusion reaction, Hydrogen bomb, Nuclear bomb

**Text / References Books:**

1. John Twideu and Tony Weir, "Renewal Energy Resources" BSP Publications, 2006
2. M.V.R. Koteswara Rao, "Energy Resources: Conventional & Non-Conventional" BSP Publications, 2006.
3. D.S. Chauhan, "Non-Conventional Energy Resources" New Age International.
4. C.S. Solanki, "Renewal Energy Technologies: A Practical Guide for Beginners" PHI Learning.
5. Peter Auer, "Advances in energy system and Technology" Vol I & II Edited by Academic Press.
6. Raja A.K., "Introduction to Non-Conventional Energy Resources" Scitech Publications.
7. G.D. Rai, "Non-conventional Energy sources" Khanna Publishers

## Semester-III **Open Elective**

Paper code 17PUBO2  
Environment Protection Administration  
w.e.f. 2017-18

**Total Credit: 4+0+0 =4**

**L+T+P**

Total Marks = 100

Semester End Exam = 80

Internal Assessment = 20

### **Note:**

The question paper will consist of 5 units containing 9 questions. The students are required to attempt one question from each unit. Question no 9 consisting of eight short answer questions covering entire syllabus, is compulsory.

### **Unit-I**

Environment: Meaning, definition, scope and significance

Environment Ethics

Environment Challenges in India

### **Unit-II**

Environment Protection: Meaning, Definition and Significance.

Environment Protection Act, 1986

Bio-Diversity and its Conservation

Bio-Diversity Conservation Act, 2002

### **Unit-III**

Environment Pollution, Meaning, causes, effects and control mechanism

Types of pollution, Environment Education, Air Pollution (Prevention and Control) Act, 1981

Water Pollution (Prevention and Control) Act, 1974

### **Unit-IV**

Environmental Issues:

People's Participation in Environment Protection

Role of NGO and Panchayats in Environment Protection

Environment Management

### **Suggested Readings:**

1. Murthy, D.B.N. Environmental Awareness & Protection : A Base Book on EVS, New Delhi: Deep & Deep, 2004
2. Radha , S. & A.S. Sankhyan, Environment Challenges of the 21<sup>st</sup> Century, New Delhi : Deep & Deep, 2004.
3. Tiwari, A.K., Environmental Planning and Management, New Delhi : Deep &



- Deep, 2006.
4. Murthy, D.B.N., Environmental Planning and Management, New Delhi : Deep & Deep, 2005
  5. Garg, Bansal and Tiwari, Environment Pollution & Protection, New Delhi, Deep & Deep, 2006
  6. Verma S.B. and S.K. Singh, Environment Protection and Development, New Delhi : Deep & Deep 2005
  7. Singh, P.P. & S. Sharma, Teaching of Environment, New Delhi: Deep & Deep, 2004
  8. Tiwari, K.L. and S.K. Jadhav, Paryavaran Vigian, New Delhi: I.K. International, 2009.
  9. Chatterjee, Benimadhab , Environmental Laws: Implementation Problems and Perspectives, New Delhi, Deep & Deep, 2002.
  10. Venkat, Aruna , Environmental Law and Policy, New Delhi, PHI Learning, 2011.
  11. Upadhyay, Jai Jai Ram , Paryavaran Vidhi, Allahabad, Central Law Agency, 2013.
  12. Sengar, Dharmendra S., Environmental Law, New Delhi, PHI, 2012.
  13. Tiwari K.L and S.K. Jadhav, Paryavaran Vigian, New Delhi, I.K. International, 2009.
  14. Ganesamurthy, V.S., Environmental Status and Policy in India, New Delhi: New Century Publications, 2011.

**Department of Political Science**

**Semester- III 2017-18**

**Open Elective: *Natural and Manmade Disaster* 17POL01**

**Max. Marks: 80  
Internal Assessment: 20**

*Note: The question paper will be divided into five units carrying equal marks i.e. 16 marks. Students shall be asked to attempt one out of two questions from each unit. Unit five shall contain eight short answer type questions without any internal choice and it shall be covering the entire syllabus. As such, all questions in unit five shall be compulsory.*

**UNIT- I**

- i. Classification of Disasters; Conceptualizing the interface between environmental degradation and disasters
- ii. Natural Disasters I: Earthquakes & Tsunamis; Volcanic Eruptions; Landslides and Avalanches

**UNIT- II**

- iii. Natural Disasters II: Cyclones; Forest-fires; Droughts and Desertification; Floods

**UNIT- III**

- iv. Human Induced Disasters I: Nuclear Disasters; Chemical Disasters; Soil and Water Pollution

**UNIT- IV**

- v. Human Induced Disasters II: Global warming; Biological Disasters: Epidemics

**Essential Readings**

1. Ahmed, Shaik Iftikhar (2008). *Disaster Management in the Wake of a Flood*, Twenty First Century Publications, Patiala.
2. Bryant Edwards (2005). *Natural Hazards*, Cambridge University Press, U.K.
3. Carter, W. Nick (1991). *Disaster Management*, Asian Development Bank, Manila.
4. Central Water Commission (1987). *Flood Atlas of India*, CWC, New Delhi.
5. Central Water Commission (1989). *Manual of Flood Forecasting*, New Delhi.
6. Government of India (1997). *Vulnerability Atlas of India*, New Delhi.
- Kapur, A. (2010). *Vulnerable India: A Geographical Study of Disasters*, Sage Publications, New Delhi.
7. Kapur, A. (2005). *Disasters in India: Studies of Grim Reality*, Rawat Publications, Jaipur.
8. Sahni, Pardeep et al. (eds.) (2002). *Disaster Mitigation Experiences and Reflections*, Prentice Hall of India, New Delhi.

**Further Readings:**

1. Bilham, R. (2009). The seismic future of cities. *Bulletin of Earthquake Engineering*, 7, pp. 839-887.

2. Bureau of Indian Standards (2002). Indian Standards: Criteria for Earthquake Resistant Design of Structures, Part I, Fifth Revision.
3. Government of India (1997). Vulnerability Atlas of India (New Delhi: Building Materials and Technology Promotion Council, Ministry of Housing & Urban Poverty Alleviation).

## SYLLABUS FOR OPEN ELECTIVE (SANSKRIT)

Semester- III	M.M-100
Credit- 3	Theory-80
Course code-18SKTO2	Internal Assessment-20
<b>Ancient Indian Ethics</b>	
<b>प्राचीन भारतीय नीतिशास्त्र</b>	

घटक – I	तैत्तिरीय उपनिषद्– शिक्षावल्ली	20
घटक – II	श्रीमद्भगवद्गीता अध्याय–6	20
घटक – III	श्रीमद्भगवद्गीता अध्याय–16,17	20
घटक – IV	हितोपदेश (मित्रलाभ)	20

Guidelines : Students will be required to attempt five questions of 16 marks each.

### दिशा निर्देश –

Question no. 1 will comprise eight short answer type questions from all Units.

Guidelines for other Four questions are as under:

Unit I :	One critical question out of two Or two shortnotes out of four.	16
Unit II :	One critical question out of two Or two shortnotes out of four.	16
Unit III :	One critical question out of two Or two shortnotes out of four.	16
Unit IV :	One critical question out of two Or two shortnotes out of four.	16

### अनुशंसित ग्रन्थ –

1. तैत्तिरीय उपनिषद्, गीता प्रैस गोरखपुर
2. भर्तृहरि : शतकत्रयम्, नाग पब्लिशर्स, दिल्ली
3. नीतिशतकम् (भर्तृहरि कृत), भारतीय विद्या प्रकाशन, दिल्ली
4. संस्कृत के लोक विश्रुत नीतिकाव्य, चौखम्बा ओरिण्टालिया, दिल्ली
5. श्रीमद्भगवद्गीता, गीता प्रैस, गोरखपुर
6. हितोपदेश, नारायण पांडे

**MA 3<sup>rd</sup> Semester (Open Elective Paper)**

Sem	Paper No	Code	Nomenclature of Paper	Contact hours/L +T+P	Marks			Credit
					Theory	I.A	Total	
III	Paper	16SOCO2	Indian Society	4:0:0	80	20	100	3

**Scheme of Examination:**

It is decided to adopt the new scheme of Choice Based Credit System of examination whereby all the papers have four units comprising of 80 marks and the Internal Assessment component will be of 20 marks in all the Semesters. In the theory paper students will be asked to attempt four questions from the four units selecting at least one question from each unit and the 5<sup>th</sup> question shall be compulsory which will cover all units in the format of short answer type questions comprising of about 50 to 60 words. Thus, the total marks for all the five questions i.e. four from the units (16x4=64) and the 5<sup>th</sup> compulsory question of short answer numbering eight of 2 marks each i.e (8x2=16) thus making the total weight age to 80 marks. The detail of Internal Assessment of 20 marks has been prescribed by the University is given below:-

(a) One Class Test	:	10 Marks
(b) One Assignment	:	5 Marks
(c) Attendance	:	5 Marks
Less than 65%	:	0 Marks
Up to 70%	:	2 Marks
Up to 75%	:	3 Marks
Up to 80%	:	4 Marks
Above 80%	:	5 Marks

**M.A.(Sociology)**  
**Semester-III**  
**Open Elective Paper- 16SOCO2**  
**Indian Society**

**Maximum Marks: 100**  
**Theory: 80**  
**Internal Assessment: 20**  
**Time : 3 Hours**

**Note:**

3. **Nine question would be set in all.**
4. **Question No. fifth shall be based on the entire syllabus and would be compulsory. It would contain eight short answer questions of two marks each.**
5. **There would be two questions (16 marks each) from each of the four units.**
6. **The candidate would be required to attempt four questions (one compulsory and other four questions selecting one from each unit).**

**Unit – I**

Indian Society: Evolution of Indian Society: Socio- Cultural Dimensions; Unity in Diversity: Cultural, Linguistic, Religious and Tribal.

**Unit – II**

Social Stratification: Social Differentiation and Stratification. Forms of Stratification: Caste, Class and Gender.

**Unit – III**

Social Change: Development and Social Change, Processes of Change: Sanskritization, Westernization and globalization.

**Unit – IV**

Contemporary Issues: Status of Women: Demographic, Social, Cultural, Economic and Political Dimensions; Adverse Sex Ratio: Causes and Consequences.

**References:**

- Ahlawat, S.R and Neerja Ahlawat (2015) (ed.) Crises of Social Transformation in India, Rawat Publication, Delhi
- Ahlawat, Neerja (2012) “Political Economy of Haryana’s Khaps”, “Economic and Political Weekly, Vol - XLVII No. 47-48, December 01.
- Ahlawat, Neerja (2013), “Dispensable Daughters and Indispensable Sons: Discrete family Choice”, Social Change, 43(3) PP-365-376
- Ahuja, Ram (2003) Society in India, Rawat Publications, Delhi
- Desai, Neera and Maithreyi Krishna Raj. (1987). Women and Society in India, New Delhi: Ajanta Publishers.

Dube, S.C. (1967). *The Indian Village*. New Delhi: National Book Trust.

Ghurye, G.S. (1957). *Caste and Race in India*, Bombay: Popular Book Depot.

Karve, Irawati (1961). *Hindu Society: An Interpretation*, Poona: Deccan College.

Prabhu, P.H (1979): *Hindu Social Organization*, Popular Prakashan.

Sharma, K.L. (2011). *Indian Social Structure and Change*, New Delhi: Rawat Publications.

Srinivas, M.N. (1960). *India's Villages*. Bombay: Asia Publishing House.

Srinivas, M.N. (1970). *Social Change in Modern India*, Berkeley, California: University of California Press.

(1991), *India: Social Structure*, Delhi: Chaman offset Printers.

## Optimization Techniques (3<sup>rd</sup> Semester)

PAPER CODE: 16STAO3

Maximum Marks: 80  
Internal Assessment Marks: 20  
Time: 3 Hours  
Credit: 03

### Section –I

Linear Programming Problems: Formulation and their Solution by Simplex and Artificial Variable Techniques. Resolution of Degeneracy in LPP. Duality in LPP: Solution of Primal-Dual Problems by Dual Simplex Method and Economic Interpretation of Duality. Solutions of Integer Programming Problems (IPP).

### Section –II

Transportation Problems: Mathematical Formulation and their Optimal Solution. Assignment Problems: Mathematical Formulation and their Solution by Hungarian Assignment Method. Theory of Games: Characteristic of Games, Minimax (Maximin) Criterion and Optimal Strategy. Solution of Games with (or without) Saddle Point. Solution of  $m \times n$  Games by Linear Programming Method. Principle of Dominance.

### Section-III

Markov Chains: Classification of States and Chains. Higher Transition Probabilities. Elementary Idea of Birth and Death Processes. Queuing Theory: Description of Queuing Problems, Notations, Measures of Effectiveness and Characteristics. Queuing Systems: M/M/1, M/M/C, M/M/1/R, M/G/1 and G/M/1 Models with Waiting Time Distribution and their Steady State Solutions.

### Section –IV

Inventory Problems: Classification and Cost involved in Inventory Problems. Solution of Deterministic and Probabilistic Inventory Models. Job Sequencing Problems: Processing of N Jobs through Two, Three and M Machines. PERT and CPM Techniques. Labeling Time Estimate and Determination of Critical Path on Network Analysis.

### Books Suggested:

1. Gass, S.I. : Linear Programming (Methods and Applications)
2. Kambo, N.S : Mathematical Programming Techniques
3. Hadely, G. : Linear Programming
4. Medhi, J. : Stochastic Processes (New Age International)
5. Donal, Gross & Carl, M. Hariss : Fundamentals of Queuing Theory (Wiley)
6. Kashyap, B.R.K & Chaudhary, M.L. : An Introduction to Queuing Theory (A.A.Publications)
7. Churchman : Introduction to Operations Research (J. Wiley)
8. Sharma, S.D. : Operation Research (Kedar Nath Ram Nath, India)

**Note:** The examiner is to set the question paper into five units- A, B, C, D & E. In each unit A, B, C & D, he/she has to set two questions of 16 marks each from section I, II, III, & IV respectively and the candidate will attempt one question from each unit. In unit E, there will be 8 short answered questions of 2 marks each, covering the whole syllabus and the candidate has to attempt all the questions.

**DEPARTMENT OF ZOOLOGY  
M. Sc. ZOOLOGY**

**Course Title: Wild Life And Conservation**

**Semester- III**

**Course no.: 16Z0002**

**MM:T80+IA20**

**Time: 3 Hr**

Note: There shall be seven questions in total. One question will be compulsory (short answer type) covering the entire syllabus and remaining six questions will be set two from each unit. Students are required to attempt question 1 and 4 more selecting at least one from each unit.

**Unit-I**

Wildlife: Definition, significance and wildlife zones of the world and India, Protected Area Systems, Present status of National PA-Systems. Theory and Practice of Biosphere Reserves of the world: Biosphere Reserves of India. Natural Heritage sites, Wildlife and livelihood; Wildlife and illegal trade & control.

**Unit-II**

Wildlife Damage, electric fences for wildlife damage control, Basic electric fence design, Trench design, line trapping, Mist netting, Rocket netting Chemical capture: Equipment, Drugs, Plan of operation. Poaching: Its implications, conducting anti-poaching operations.

**Unit-III**

Wildlife conservation techniques, role of WWF, IUCN, UNEP, Red Data Book; Categories of Endangered Wildlife Species. National Projects: Project Tiger, Project elephant, Project Rhinoceros, Project Crocodiles.

**\*As per SOE Zoology**

**\*\*proposed maximum marks and subject to change in uniformity with other faculties of university**

**List of Recommended Books**

1. Techniques for wildlife Census in India by W.A. Rogers (A field manual); Wildlife Institute of India, Dehradun.
2. Wildlife Wealth of India by T.C. Majupuria; Tecpress Services, L.P., 487/42-SOL Wattenslip, Pratumnam Bangkok, 10400, Thailand
3. Ali, S. Ripley S.D. Handbook of Birds of India, Pakistan 10-Vols. Oxford University Press, Bombay.
4. The Book of Indian Animals by S.H. Prater, BNHS-Publication, Bombay.
5. Wildlife in India by V.B. Saharia Natraj Publishers, Dehradun.
6. E.P. Gee, The Wildlife of India.