ADVANCED MICROPROCESSOR & INTERFACING
DE-II (EEcT-451-E)

L T P/D TOTAL
3 1 -   4

Theory   : 100 Marks
Sessional : 50 Marks
Duration : 3 Hrs.

UNIT I :
8086 Microprocessor: 8086 Internal Architecture timing diagram, interfacing 8086 to memory.

UNIT II :
8086 Assembly Language Programs: 8086 instruction set, Assembler directive, program   development method, Writing   simple 8086 programs for use with an assembler.

UNIT III :
8086 Interrupts: 8086 Interrupts and   Interrupt responses, hardware interrupt application.
Interfacing: Digital interfacing, Programming parallel port and handshake I/O, Interfacing a Microprocessor to keyboards & displays, Analog interfacing, introducing to A/D and D/A Converter & applications.

UNIT IV:
Introduction to 80286, 80386, 80486 microprocessor, Single chip microcontrollers.

NOTE: The question paper shall have eight questions in all organized into four sections, each section having two questions from each of the four units. The candidate shall have to attempt five questions in all, selecting at least one question from each unit.

References:
1.   Duglas V. Hall " Microprocessor & Interfacing Programming & Hardware-IInd Edition", TATA Mc Graw Hill.
2.   A.P. Mathur ", Introduction Microprocessor–IIIrd Edition", (TMH)
3.   Tabak. D," Advanced Microprocessor-2nd edition," (TMH)

RADIO & TV ENGINEERING
DE-IV (EEcT-450-E)

L T P /D TOTAL   Theory : 100 mks
4 1 -   5   Sessional: 50 mks
                                                                   Duration : 3 Hrs.

UNIT I: Radio Transmitter: Modulation, AM Transmitter, FM Transmitter; AFC, Sensitivity selectivity, VODAS, Radio Transmitter, Telephone transmitter Privacy device, Radio telegraph transmitter.

UNIT II: Radio receiver: TRF, super-heterodyne, communication receiver, double conversion receiver, SSB Rx, freq synthesis, image freq, selectivity. IF freq tracking AFC & AGC n Rx, FM demodulator, neutralization, freq drift & scintillation, Diversity reception, fading, armstrong FM Rx.

UNIT III: Monochrome T.V: Introduction, composite video signal picture tube, camera tube image orthicon, vidicon, plumbicon TV Tx & Rx, modulation technique, TV Application CATV, CCTV, Video games Theater T.V., VTR, AGC, Various AGC system

UNIT IV: Color T.V.: Compatibility, three color theory different color picture tube, color signal transmission, NTSC, Color TV, PAL, SECAM

NOTE: The question paper shall have eight questions in all organized into four sections, each section having two questions from each of the four units. The candidate shall have to attempt five questions in all selecting at least one question from each unit.

References:

1.   Monochrome & color T.V. by R.R.Gulati (Wiley Eastern Ltd.)
2.   Radio Engineering by G.K. Mithal (Khanna Publications)
3.   A.M Dhaka, " Monochrome & color T.V" (TMH)
4.   Skolnik.M.I," Introduction to Radar System" (TMH)

ANTENNA & WAVE PROPAGATION
DE-II (EEcT-449-E)

L T   P/D TOTAL   Theory : 100 Marks
3 1   -   4   Sessional: 50 Marks
                                                         Duration: 3 Hrs.

UNIT I :
Basic Principle: Scalar & vector potential for electric & magnetic components, Retardation, retarded vector potential relation between scalar & vector potential current element.
Basic Antennas: Half wave dipole, quarter wave mono pole, short dipole, calculation of   radiation resistance, effective length & pointing vector. Current distribution: Linear current & sinusoidal distribution.

UNIT II :
Antenna Parameter: Solid angle, radiation intensity, directive gain directivity, power gain, beam width: HPBW, FNBW, band width, Q factor resonance in antenna, antenna as a transmission line, antenna as active component, antenna temp. Radiation pattern, Eplane H plane, efficiency. Effective aperture, scattering aperture, loss aperture, directivity, polarization. Transmission between two Antenna, Reciprocity theorem application of Reciprocity theorem.
Low Freq Antennas: Monopole, folded, loop antenna, biconical antenna, yagiuda antenna: different antenna used for A.M & FM transmission. VHF & LHF antennas, Resonant Antennas & non-resonant antenna, design parameter of different Antenna.

UNIT III :
Microwave Antenna: Parabolic Antenna, Lens Antenna, horn Antenna, Antenna used for tracking & antenna used for satellite communication. E-plane horn, H-Plane horn circulars Horn, pyramidal Horn.
Radio Wave Propagation: Different technique for radio wave propagation: Ground wave propagation, space wave, sky wave, duct propagation, troposcatter.

UNIT IV :
Ionosphere propagation: Skip distance, LUF, MUF, Critical freq, Variation of refractive index with height, effect of earth magnetize field on ionospheres propagation, calculation of refractive index dielectric constant & Conductivity for ionospheres. Ionospheres abnormalities.
Antenna Array: Multiplication of Pattern, Significance of Antenna Array, Broadside, End fired, Uniform, Parasitic feed in Antenna Array, Calculation of Directivity & B.W for Antenna array. Increased directed directive end fired array. Tapering of Array: Binomial Array, Techepbyshe.

NOTE: The question paper shall have eight questions in all organized into four sections, each section having two questions from each of the four units. The candidate shall have to attempt five questions in all, selecting at least one question from each unit.

References:
1. Jordan Balmian:- Electromagnetic Field Theory (PHI)
2. Kraus Antenna & Wave propagation (Mc Graw Hill)
3. Antenna & Wave propagation by K.D.Prasad (Satya Prakashan)
4. Collin R.E :- Antenna & Wave Propagation (TMH)

ADVANCED MICROPROCESSOR & INTERFACING
DE-II (EEcT-451-E)

L T P/D TOTAL   Theory   : 100 Marks
3 1 -   4   Sessional : 50 Marks
                                                             Duration : 3 Hrs.

UNIT I :
8086 Microprocessor: 8086 Internal Architecture timing diagram, interfacing 8086 to memory.

UNIT II :
8086 Assembly Language Programs: 8086 instruction set, Assembler directive, program   development method, Writing   simple 8086 programs for use with an assembler.

UNIT III :
8086 Interrupts: 8086 Interrupts and   Interrupt responses, hardware interrupt application.
Interfacing: Digital interfacing, Programming parallel port and handshake I/O, Interfacing a Microprocessor to keyboards & displays, Analog interfacing, introducing to A/D and D/A Converter & applications.

UNIT IV:
Introduction to 80286, 80386, 80486 microprocessor, Single chip microcontrollers.

NOTE: The question paper shall have eight questions in all organized into four sections, each section having two questions from each of the four units. The candidate shall have to attempt five questions in all, selecting at least one question from each unit.

References:
1.   Duglas V. Hall " Microprocessor & Interfacing Programming & Hardware-IInd Edition", TATA Mc Graw Hill.
2.   A.P. Mathur ", Introduction Microprocessor–IIIrd Edition", (TMH)
3.   Tabak. D," Advanced Microprocessor-2nd edition," (TMH)

RADIO & TV ENGINEERING
DE-IV (EEcT-450-E)

L T P /D TOTAL   Theory : 100 mks
4 1 -   5   Sessional: 50 mks
                                                       Duration : 3 Hrs.

UNIT I: Radio Transmitter: Modulation, AM Transmitter, FM Transmitter; AFC, Sensitivity selectivity, VODAS, Radio Transmitter, Telephone transmitter Privacy device, Radio telegraph transmitter.

UNIT II: Radio receiver: TRF, super-heterodyne, communication receiver, double conversion receiver, SSB Rx, freq synthesis, image freq, selectivity. IF freq tracking AFC & AGC n Rx, FM demodulator, neutralization, freq drift & scintillation, Diversity reception, fading, armstrong FM Rx.

UNIT III: Monochrome T.V: Introduction, composite video signal picture tube, camera tube image orthicon, vidicon, plumbicon TV Tx & Rx, modulation technique, TV Application CATV, CCTV, Video games Theater T.V., VTR, AGC, Various AGC system

UNIT IV: Color T.V.: Compatibility, three color theory different color picture tube, color signal transmission, NTSC, Color TV, PAL, SECAM

NOTE: The question paper shall have eight questions in all organized into four sections, each section having two questions from each of the four units. The candidate shall have to attempt five questions in all selecting at least one question from each unit.

References:

5.   Monochrome & color T.V. by R.R.Gulati (Wiley Eastern Ltd.)
6.   Radio Engineering by G.K. Mithal (Khanna Publications)
7.   A.M Dhaka, " Monochrome & color T.V" (TMH)
8.   Skolnik.M.I," Introduction to Radar System" (TMH)

DIGITAL HARDWARE DESIGN
DE- IV (EEcT-452-E)

L T P/D TOTAL   Theory :100 mks
4 1   -   5   Sessional: 50 mks
                                                     Duration : 3 Hrs

UNIT I: Combination Circuit Design: Adders Substractor, BCD Adder code converters, 7-segment display, designing using multiplexer, demultiplexer, decoder, encoder.

UNIT II: Synchronous Sequential ckt Design: Flip-flop, FSM. Sequence detector, party checker & Detector and different applicator of sequential ckts, state table state diagram. Moose & mealy sequential ckt with state diagram reduction of state table using merger graph method & moose method, computing M/C, limitation & capabilities of seq. Ckt.

UNIT III: Asynchronous Sequential ckt. : FSM, Racer, state table & flow table diagram, compatibility chart state assignment in Asynchronous ckt.

UNIT IV: Introduction to: ROM, PROM, EPROM, EEPROM, masked ROM, FAMOS, PAL, PLA, FPGA.

NOTE: The question paper shall have eight questions in all organized into four sections, each section having two questions from each of the four units. The candidate shall have to attempt five questions in all, selecting at least one question from each unit.

References:

1. Z.Kohavi by Switching & System (McGraw Hill)
2. R.P.Jain By Digital Electronics & Microprocessor (McGraw Hill)
3. W.Fletcher :- An Engineering Approach to Electronic Design (PHI)
4. Floyd: - Digital Fundamentals (UBS)
5. Morris Mano:- Digital Logic &Computer Design(PHI)

DATA COMMUNICATION & NETWORKING
DE-II (EEcT-453-E)

L T P/D TOTAL   Theory   : 100 mks
3 1   -   4   Sessional : 50 mks
                                                   Duration : 3Hrs.

UNIT I: Basic & Computer Networks, Need & Evolution of Computer Networks, Description of LAN, MAN, WAN and wireless Networks, OSI and TCP/IP models with description of Data Encapsulation & peer to peer communication, Comparison of OSI and TCP/IP, Basic terminology of computer networks-bandwidth, Physical and logical topologies, Media-10 base Z, 0 base S, 10 base T, 100base TX, 100base FX, 1000 base LX and wireless, LAN & WAN devices- Router, bridge Ethernet switch HUB, Modem CSU/DSU etc.

UNIT II: Physical Layer- Representation, one bit on physical modem i.e. in wired network, Optical Network and wireless N/W, Encoding/Modulation- TTL Encoding, Manchester Encoding, AM, FM and PM, Dispersion, Jitter, Latency and collision. Different types of Media- Shielded twisted pair, Unshielded twisted pair, Coaxial cable, Optical Fiber cable and wireless. Layer- LLC and MAC sub layer, MAC addressing Layer 2 devices, Framing Error control and flow control. Error detection and correction CRC Codes, block parity and Checksum, elementary data link protocol, sliding window protocol, Channel allocation problem- static and dynamic.

UNIT III: Multiple Alex protocol- ALOHA, CSMA/CU Token bus Tokening, FDDI.Network Layer, Segmentation and autonomous system path determination, Network Layer addressing, Network-layer data gram, IP addressed classes, Subneting,Sub network, Subnet mark, Routing algorithm- optiomality Principle, Shortest path routing , Hierarchical routing, Broadcast routing, Multicast routing, Routing for mobile host- Concatenated Visual circuits, tunneling, Fragmentation and DHCP. Routing Protocol- RIP, IGRP, USPF and EIGRP Network layer in ATM Networks.

UNIT IV: Transport Layer- Layer 4 Protocol TCP & UDP Three way hand shakes open connection ATM AAL Layer protocol, Session Layer design issue, Presentation Layer design issue and Application layer design issue. Application layer Protocol, TELNET, FTP, HTTP, SNMP

NOTE: The question paper shall have eight questions in all organized into four sections, each section having two questions from each of the four units. The candidate shall have to attempt five questions in all, selecting at least one question from each unit.

References:

1. Tannenbum, " Computer Networks," PHI
2. Darlx, " Computer Networks and Their Protocols", DLA Labs
3. Freer, " Comp. Communication & Networks" , East-West-Pre
4. Frozen, "Data Communication & Networking (TMH)
5. Stalling ,"Data & Computer Communication.(PHI)

OPERATING SYSTEM
DE-II (EEcT-455-E)

L T P/D TOTAL   Theory: 100 mks
3 1   -   4   Sessional: 50 mks
                                                                              Duration: 3 Hrs.

UNIT I:
Introduction: Operating System Services-types.
File Systems: File concept, File support, Access methods, Allocation methods, Directory Systems, File protection.
CPU Scheduling: Review of multiprogramming concepts, scheduling concepts, Scheduling algorithms, Algorithm evaluation, multiple processor scheduling.

UNIT II:
Memory Management: Bare machine concept, Resident monitor, Swapping-Multiple partitions, Paging, Segmentation, Combined systems, Virtual memory, Demand paging, Page replacement algorithms, Thrashing, Cache memory.

UNIT III:
I/O Management And Disk Scheduling: Organisation of I/O function, Logical structure and I/O buffering, Memory physical characteristics , First come first served scheduling,
Protection: Goals of protection, Mechanisms and policies, Domain of protection, Access matrix, Dynamic protection structure, Language based protection, Protection problems, Security. Round robin, Shortest seek time first scheduling, SCAN, CSCAN, LOOK, CLOOK, Selecting a disk scheduling algorithm, Sector queueing.

UNIT IV:
Concurrency: Principle of concurrency, Mutual exclusion, Software support, Dekker's algorithm, Hardware support, Operating system support, Semaphore Implementation, Messages, Deadlock presentation , Deadlock detection, Deadlock avoidance, recovery.

NOTE: The question paper shall have eight questions in all organized into four sections, each section having two questions from each of the four units. The candidate shall have to attempt five questions in all, selecting at least one question from each unit.

Text Book:
1.   James L. Peterson and Abraham Silbersachatz, Operating System Concepts, Addison Wesley, World Students Series Edition, Second edition, 1985.

References:
1.   Harvey M. Deitel, An Introduction to Operating Systems, Addison Wesley Publishing Company, Revised First edition, 1984.
2.   John J. Donovan, Systems Programming, McGraw Hill Book Co., International Student Edition, 1985.

Digital Image Processing
DE-IV (EEcT-454-E)

L T   P/D TOTAL   Theory   : 100 mks
4   1   -   5   Sessional: 50 mks
                                                                Duration: 3 Hrs.

UNIT I:
DIGITAL IMAGE FUNDAMENTALS: Introduction, image model, sampling and Quantization, relationship between pixels, imaging geometry, photographic film, discrete, Fourier transform, properties of two dimensional Fourier transform, fast Fourier transform.

UNIT II:
IMAGE ENHANCEMENT AND COMPRESSION: Enhancement by point processing, spatial filtering and enhancement in the frequency domain, pseudo color image processing, image compression models, error free compression, image compression standards.

UNIT III:
IMAGE RESTORATIONS: Degradation, models, diagonalizations of matrices, inverse filtering, interactive estorations, geometric transformations.
IMAGE SEGMENTATION: Detection of discontinuities, edge linking and boundary   detection, thresholding, region orienting segmentation.

UNIT IV:
REPRESENTATIONS AND RECOGNITION: Representations schemes, boundary descriptors, regional descriptors, morphology, recognition and interpretation, basics.

NOTE: The question paper shall have eight questions in all organized into four sections, each section having two questions from each of the four units. The candidate shall have to attempt five questions in all, selecting at least one question from each unit.

TEXT BOOKS
1.   Rafael c. Gonzalez and Richard E. Woods, digital image processing, Addison Wesley publishing company, 1987

REFERENCES
1.   William K. Pratt, digital image processing, John Wiley and sons, 1978
2.   Jain, Fundamentals of digital image processing, PHI, 1996
3.   Barrie W. Jervis , "digital signal processing (Pearson education India)
4.   Prokis, " digital signal processing" (PHI)

SOFTWARE ENGINEERING
DE-IV (EEcT-456-E)

L T P/D   TOTAL   Theory   : 100 mks
4 1 -   5   Sessional : 50 mks
                                                           Duration : 3Hrs

UNIT- I: Introduction: Programs vs. Software products, Emergence of Software Engineering, Notable Changes in Software Development Practices, Software Life Cycle Models.
Software Project Management: Project Planning, Project Size Estimation Matrices, Project Estimation Techniques, Empirical Estimation Techniques, COCOMO- A heuristic Estimation Technique, Halstead's software Science- An Analytical Technique, Staffing Level Estimation, Scheduling, Organization and Team structures, Staffing, Risk Management, Software Configuration Management.

UNIT- II: Requirements Analysis and Specification: Requirements Analysis, Software Requirements Specification (SRS), Formal System Development Techniques, Algebraic Specifications,   Software Design: Good Software Design/Practices, Cohesion and Coupling, Neat Hierarchy, Software Design Approaches.
Function-Oriented Software Design : Overview of the SA/DK Methodology, Structured Analysis, Data Flow Diagrams (DFDs), Extending the DFD Technique to Real Time Systems, Structured Design.

UNIT- III: Object Oriented Software Design: Overview of Object-Oriented Concepts, Object-Oriented vs. Function –Oriented Design, Graphical Representation of Object-Oriented Design, Object-Oriented Design Methodology.
User Interface Design: Characteristics of a Good User Interface Design, Basic Concepts, Command Language –Based Interface, Menu-Based Interface, Director Manipulation Interfaces, Windowing Systems, Types of Widgets, An overview of X Window/MOTIF, Visual C++.
Coding And Testing: Coding, Unit testing, Black Box Testing, White-Box testing, Debugging, Program Analysis Tools, Integration Testing, System, General Issues Associated with Testing.

UNIT-IV Software Reliability and Quality Assurance: Software Reliability, Software Quality, Software, Software Quality Management, ISO 9000, SEI Capability Maturity Model. Computer Aided Software Engineering: CASE and its Scope, CASE Support in Software Architecture of a CASE Environment.
Software Maintenance: Software Reverse Engineering, Software Maintenance Process Models, and Estimation of Maintenance Costs.

NOTE: The question paper shall have eight questions in all organized into four sections, each section having two questions from each of the four units. The candidate shall have to attempt five questions in all, selecting at least one question from each unit.

References:
1.   Rajib Mall, " Fundamentals of Software Engineering", PHI
2.   RogerS.Pressman ,"Software Engineering A Practitioner's Approach, McGraw-Hill.
3.   Ali Behforooz and Frederich J. Hudson, " Software Engineering Fundamentals", Oxford University Press.

MODELLING AND SIMULATION
EEcT-402-E
VIII SEMESTER

L T P Total   Theory :   100 mks
4 1 - 5   Sessionals: 50 mks
                                               Duration :   3 hrs

UNIT 1:
Introduction: Systems, Models and simulation, concept of model, model classification and mathematical representation, Identification, continuous and discrete, static and dynamic, deterministic and stochastic systems.

UNIT 2:
Discrete event systems: Introduction, statistical model in simulation, random number generation, method of generating random variables, discrete random variates, generating correlated random numbers. Queuing models: Characteristics, queuing notation, single server and multiple server systems.

UNIT 3:
Simulation: State space simulation techniques, Digital simulation languages,   Analog simulation of linear systems, magnitude scaling, time scaling,   simulation equations, transfer function simulator, hybrid simulation. Load flow,   short circuit and steady state stability studies. Transmission parameters.

UNIT 4:
Matlab: Matlab environment, programming, modeling, with matrices, simulation in Matlab, introduction to dynamic system simulation using SIMULINK, applications of simulink.

Note: The question paper shall have eight questions in all organized into four sections, each section having two questions from each of the four units. The candidate shall have to attempt five questions in all, selecting at least one question from each unit.

REFERENCES:

1.   Banks J. Carson J.S and Nelson B: Discrete Event system simulation, PHI.
2.   Celler F.E. Continuous system simulation, Springer veriag.
3.   Athanasios Papoulis: Probability Random variables and Statistics Processes, Mc-Graw Hill.
4.   Reference manual & user's guide on Matlab.
5.   Analog computation & simulation (V Raja Raman)
6.   System simulation with digital computer (D E O)
7.   System simulation (Jorden)
8.   System modeling & Computer Simulation by Nain A. Kheir. Marcel Dekker Inc.
9.   Discrete Event System Simulation, PHI Banks J. Carson J. S. and Nelson B.
10.   Advanced Computer methods for power system Analysis- Stagg and Elabiad.
11.   Advanced power System L. P. Singh (New Age Publication)

MODERN TRENDS IN COMMUNICATION
VIII Sem. (EEcT-404-E)

L T   P/D TOTAL   Theory   : 100 Mks
4 1   -   5   Sessional: 50 Mks
                                                             Duration : 3 hrs.

UNIT I
Digital Communication: - Introduction to sampling theorem for band limited & band pass signals, bit rate, detection levels, Digital filtering, Pulse code modulation, Adaptive data modulation, coding, Coding efficiency, introduction to used codes. Error detection & corrections codes, ASK,FSK, PSK,DPSK,QPSK.

UNIT II :
Satellite Communication: - Introduction, Satellite orbits, frequency used, station keeping, orientation of satellite, transmission paths & its losses & noise consideration. Satellite systems flux density, effective isotropic radiated power, link budget calculations, multiple accessing techniques.

UNIT III :
Fiber Optic Communication: - Introduction, advantages & disadvantages, principle of light transmission in a fiber, types of optical fibers, effect of index profile on propagation, modes of propagation. Number of modes via fiber, single mode propagation, rayleigh scattering losses, absorption losses, mode coupling losses, bending losses, combined losses, effect of dispersion on pulse transmission, inter model dispersion, material dispersion, wave guide dispersion, total dispersion.

UNIT IV:
Optical Communication:- LEDs, semiconductor laser diode, the PN photodiode, PIN diode. The avalanche photo diode,fiber optic communication system block diagram & loss budget, connectors & Splices.

NOTE : The question paper shall have eight questions in all organized into four sections, each section having two questions from each of the four units. The candidate shall have to attempt five questions in all, selecting at least one question from each unit.

References:

   1. Dennis Roddy & John Collen: Electronics Communication.(PHI)
   2. John Gowar: Optical communication system (PHI)
   3. D. C. Aggarwal : Satellite Communication

SPECIAL ELECTRIC MACHINES
VIII Sem. (EEcT-406-E)

L T P/D Total   Theory   : 100 mks
4 1 -   5   Sessional: 50 mks

Duration : 3 hrs.

UNIT I   Different types of FHP motors and uses in domestic & industrial applications, Single phase Induction motor, Qualitative examination starting and running performance of I-Phase Induction Motors.

UNIT II Linear Induction Motors and Actuators and its principle of operation, Linear Levitated machine & applications, Permanent magnet motors, High performance energy efficient machines, Effect of E.M.F injected into secondary circuits , quantitative study, scharge motor.

UNIT III   Special Induction generations, Special motors and generators associated with Wind, Solar, Tidal, Biogas and other unconventional energy forms and their applications.

UNIT IV   Synchronous motors, Series universal motors, Stepper motor, Permanent magnet D.C. motor, Permanent magnet AC motors, Switch reluctance motors. Servo motor, shaded pole motor, brush less D.C motor, Typical applications in Computers, Electronics, Communications and Information Technologies.

NOTE: The question paper shall have eight questions in all organized into four sections, each section having two questions from each of the four units. The candidate shall have to attempt five questions in all, selecting at least one question from each unit.

References:

1. Generalized Electrical Machines by P. S. Bhimbra
2   Generations of Electrical Energy by   A. E. Fitzgerald/Charles , Kingsley J. R.
3   The Performance &design of A.C Commutator Motor by O.E .Taylor
4   Performance & Design of A.C machines by M.G. Say

SIMULATION LAB
VIII- Sem. (EEcT-422-E)

L T P Total   Practical : 50 mks
-   -   3   3   Sessional: 25 mks
                                                                   Duration: 3 hrs.

List of Experiments :

Perform the experiments using C/C++ Language

1.   To develop a Program for Matrix n*n.

2.   Add two Matrix.

3.   Multiplication of two Matrix.

4.   Find Inverse of Matrix.

5.   Check stability by Routh Hurwitz Criteria.

6.   Check stability by Jury Test.

7.   Draw a circle for given radius use graphics.

8.   Draw a straight-line use graphics.

9.   Find Eigen value for given Matrix.

10.   To develop a program for Cramer's Rule

11.   To develop a program for Tower of Hanoi.