

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a) Explain the sources of water with reference to quantity and quality? 7 M
b) What is intake structure? Explain the reservoir intake structure with neat sketch? 5 M

(OR)

2. a) What are the different types of water demand. 8 M
b) Write short note on Waterborne diseases. 4 M

UNIT-II

3. a) What is MPN index? Explain the detailed procedure for determining MPN index of drinking water. 7 M
b) Explain the importance of chemical and biological analysis of water used for domestic purposes? 5 M

(OR)

4. a) Explain functions of each unit of a water supply scheme for river water with a flow diagram 7 M
b) list out BIS standards for drinking water quality. 5 M

UNIT-III

5. a) Derive the stokes equation for settling velocity of spherical discrete particle. 7 M
b) Compute the dimensions of a continuous flow rectangular settling tank for a population of 20000 persons with a daily per capita water allowance of 120 liters. Assume detention period to be 6 hours. 5 M

(OR)

6. a) How do you find the optimum dosage of coagulant required for purification of water? 7 M
b) Explain the principle of coagulation? 5 M

UNIT-IV

7. a) Explain the operation and backwashing of rapid sand filter and draw neat sketch? 7 M
b) Design slow sand filter beds for a population of 60,000 persons with average rate of demand 160 lpcd. Assume any other data needed. 5 M

(OR)

8. a) What are the different methods of disinfection? Explain any three methods in briefly. 7 M
b) Explain the Nalgonda technique for the removal of fluoride from water? 5 M

UNIT-V

9. a) With neat sketches explain the layouts of distribution system. 8 M
b) What are the functions of a service reservoir? 4 M

(OR)

10. a) Explain Hardy-cross method for the analysis of complex pipe networks? 7 M
b) Write short notes on 5 M
i) Sluice valve ii) Reflux valve iii) Water meters iv) Hydrants

POWER ELECTRONICS**(Electrical and Electronics Engineering)****Time: 3 Hours****Max Marks: 60**

Answer ONE Question from each Unit

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All parts of the Question must be answered at one place

UNIT-I

1. a) Brief the significance of latching current, holding current and break over voltage of SCR. 6M
- b) Construction wise, how IGBT is different from MOSFET with necessary diagram. 6M

(OR)

2. Elaborate the dynamic characteristics of Power MOSFET with the help of junction capacitance and necessary circuit diagram. 12M

UNIT-II

3. a) Explain the operation of single phase fully controlled converter with R load 6M
- b) Explain single phase semi converter with RL load. 6M

(OR)

4. a) Explain the operation of single phase full-wave controlled rectifier bridge type with R-L load under discontinuous mode of operation? Draw the waveforms of output voltage, voltage across SCR and average load current for $\alpha = 60^\circ$. 6M
- b) State the phase angle controlled technique. Explain the operation of single – phase angle controlled rectifier. Also, Derive the expression for average dc output voltage. Draw the relevant waveforms. 6M

UNIT-III

5. a) Draw the output voltage waveforms and derive the average and rms voltage expressions of three phase semi converter on discontinuous conduction mode. 6M
- b) A three phase full converter is connected to a resistive load of $10\ \Omega$. If the firing angle of SCR is $\alpha = 45^\circ$ and it feeds 4 kW power to a resistive load determine the amplitude of maximum line input voltage. 6M

(OR)

6. a) Explain the operation of three phase fully controlled converter with R load 6M
- b) Differentiate Circulating current mode and Non-circulating mode operation of dual converters. 6M

UNIT-IV

7. Explain single phase AC voltage controller with RL load and also draw the wave forms 12M

(OR)

8. a) Illustrate the principle of working of a 1-phase to 1-phase bridge type step down cyclo-converter feeding an R load with $f_o = 1/4 f_s$. 6M
- b) Describe the working principle of 1- phase to 1- phase step-up midpoint type cyclo-converter with associated waveforms for R load and $f_o = 3f_s$. 6M

UNIT-V

9. With help of neat circuit diagram and associated waveforms discuss the operation of a Buck converter in continuous conduction mode and discontinuous conduction mode. 12M

(OR)

10. a) Discuss various PWM techniques used in inverters. How sinusoidal PWM is useful in the harmonic elimination? 6M
- b) A 50 Hz single – phase full bridge produces a square wave voltage across load when operating from a 300 V DC supply, the AC load consists of a resistance of $30\ \Omega$ in series with inductance 15 mH. Determine the frequencies and r.m.s values of the lowest order harmonics in the AC load current. 6M

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a) Discuss the three primary boundary conditions used in solving heat transfer problems 6m
- b) A wall is made of layers having thickness 5 cm, 15 cm and 5 cm with thermal conductivities 3 W/mK, 1.5 W/mK and 3 W/mK respectively. If the temperatures at extreme ends are 50 °C and 30 °C. Determine the rate of heat transfer per unit area. Also find the interface temperatures. 6m

(OR)

2. a) What is meant by critical radius of insulation? Derive an expression for it in the case of cylinder. 6m
- b) A wire of 6.5 mm diameter at a temperature of 60 °C is to be insulated by a material having $k = 0.174 \text{ W/m}^\circ\text{C}$. Convection heat transfer coefficient (h_0) = $8.722 \text{ W/m}^2^\circ\text{C}$. The ambient temperature is 20 °C. For maximum heat loss, what is the minimum thickness of insulation and heat loss per metre length? Also find the percentage increase in the heat dissipation too? 6m

UNIT-II

3. a) Define fin effectiveness and fin efficiency. 4m
- b) It is better to use 10 fins of 5 cm length than 5 fins of 10cm length. State and prove the correctness of the statement. Take properties as follows: diameter of fins 10mm, thermal conductivity as 45 W/m K and heat transfer coefficient as 95 W/m² K. 8m

(OR)

4. a) Explain the significance of (i) Biot number and (ii) Fourier number in unsteady state heat transfer. 4m
- b) A 6mm thick stainless steel platen ($\rho = 7800 \text{ kg/m}^3$, $C = 460 \text{ J/kg}^\circ\text{C}$, $k = 55 \text{ W/m}^\circ\text{C}$) is used to form the nose section of missile. It is held initially at a uniform temperature of 30 °C. When the missile enters the denser layers of the atmosphere at a very high velocity the effective temperature of air surrounding the nose region attains the value of 2150 °C; the surface convective heat transfer coefficient is estimated as 3395 W/m² °C. If the maximum metal temperature is not to exceed 1100 °C, determine (i) Maximum permissible time in these surroundings (ii) Inside surface temperature under these surroundings. 8m

UNIT-III

5. a) Distinguish between Forced and Natural convections and give at least two practical examples for each case. 6m
b) Air at 20°C flows over a plate $60\text{ cm} \times 30\text{ cm}$ with a velocity of 20 m/s . The critical Reynolds number is 5×10^5 . Calculate the rate of heat transfer from the plate, assuming the flow to be parallel to the 60 cm side. The plate temperature is maintained at 100°C . Properties of air at 60°C are $\rho=1.06\text{ kg/m}^3$, $C_p=1.005\text{ kJ/kgK}$, $\nu=18.97 \times 10^{-6}\text{ m}^2/\text{s}$ and $k=0.0291\text{ W/Mk}$. 6m
- (OR)**
6. a) Briefly discuss the significance of the following Non dimensional number used in convection heat transfer (i) Nusselt number (ii) Prandtl number (iii) Grashoff number 6m
b) Calculate the rate of heat loss from a human body which may be considered as a vertical cylinder 30 cm in diameter and 175 cm high while standing in a 30 km/hr wind at 15°C . The surface temperature of the human body is 35°C . 6m

UNIT-IV

7. a) Draw the temperature profiles for parallel and counter flow arrangements and define LMTD for these arrangements. 4m
b) A hot fluid at 200°C enters a heat exchanger at a mass flow rate of 10^4 kg/hr . Its specific heat is 2000 J/kg K . It is to be cooled by another fluid entering at 25°C with a mass flow rate 2500 kg/hr and specific heat 400 J/kg K . The overall heat transfer coefficient based on outside area of 20 m^2 is $250\text{ W/m}^2\text{ K}$. Find the exit temperature of the hot fluid when the fluids are in parallel flow. 8m
- (OR)**
8. a) Give a detailed classification of heat exchangers. 6m
b) Saturated steam at 120°C is condensing on the outer surface of single pass heat exchanger. The overall heat transfer coefficient is $1600\text{ W/m}^2\text{ K}$. Determine the surface area of the heat exchanger required to heat 200 kg/h of water from 20°C to 90°C . Also determine the rate of condensation of steam. Assume the latent heat of condensation to be 2195 kJ/kg . 6m

UNIT-V

9. a) What is Stefan-Boltzmann law? Define emissivity. 4m
b) A grey diffuse opaque surface ($\alpha = 0.8$) is at 100°C and receives an irradiation of 1000 W/m^2 . If the surface area is 0.1 m^2 , calculate (i) net radiative heat transfer from the surface (ii) calculate above quantity if the surface is black. 8m
- (OR)**
10. a) Derive an expression for steady state mass flux through a plain membrane. 6m
b) A steel rectangular container having walls 16 mm thick is used to store gaseous hydrogen at elevated pressure. The molar concentrations of hydrogen in the steel at the inside and outside surfaces are 1.2 kg mole/m^3 and zero respectively. Assuming the diffusion coefficient for hydrogen in steel as $0.248 \times 10^{-12}\text{ m}^2/\text{s}$, calculate the molar diffusion flux for hydrogen through the steel. 6m

**ANTENNAS AND WAVE PROPAGATION
(Electronics and Communication Engineering)****Time: 3 Hours****Max Marks: 60**

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a) What is Hertzian Dipole? Derive the expressions for radiated fields and radiation resistance of an alternating current element? 12 M
- (OR)**
2. a) Illustrate the theory behind Front-to-back ratio. Derive the relation between effective aperture, directivity 6M
- b) A thin dipole antenna is $\lambda/15$ long. If its RL is 1.5 ohms. Find its radiation efficiency. 6M

UNIT-II

3. a) Describe a 4-element End fire array of $\lambda/2$ spacing and find its radiation pattern and Beam width? 6M
- b) Explain in detail about various forms of Antenna arrays. 6M
- (OR)**
4. a) Derive an Expression for normalized field equation of an n-element uniform array? 6M
- b) Explain in detail about Phased arrays? 6M

UNIT-III

5. a) Describe in detail about two folded and three folded dipole antenna 6M
- b) Explain the formation of unidirectional radiation pattern in case of inverted V antenna and rhombic antenna 6M
- (OR)**
6. a) Design a rhombic antenna to operate at 20 MHz when the angle of elevation, $\Delta = 100^\circ$ 6M
- b) Explain the constructional features of a helical antenna with neat sketch and Distinguish between axial and modes modes of helix radiations. 6M

UNIT-IV

7. a) Describe in brief about microstrip antenna and different feeding mechanisms. 6M
- b) Explain the Gain measurement by two and three antenna method 6M
- (OR)**
8. a) Describe in detail the Cassegrain method of feeding a paraboloid reflector, with the help of the geometry of this feeding arrangement. 6M
- b) With neat sketch explain the measurement procedure of antenna impedance? 6M

UNIT-V

9. a) Define Line of Sight propagation and Obtain its equation in troposphere? 6M
- b) Explain the phenomenon of Duct propagation in detail. 6M
- (OR)**
10. a) Discuss the characteristic parameters of ionospheric propagation 6M
- b) Derive FRIIS transmission formula. 6M

AR18

CODE: 18CST309

SET-2

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech I Semester Supplementary Examinations, November-2021

**COMPUTER NETWORKS
(Common to CSE & IT)**

Time: 3 Hours

Max Marks: 60

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) Explain inter connection of network (6M)
b) Discuss about data representation (6M)
(OR)
2. a) Explain port address and specific address (6M)
b) Discuss layers in OSI model (6M)

UNIT-II

3. a) Why do you use HDLC (6M)
b) What are elementary data link protocols (6M)
(OR)
4. a) Explain general principles of congestion control (6M)
b) Discuss IP protocol (6M)

UNIT-III

5. a) Explain shortest path routing algorithm with an example. (6M)
b) Explain virtual-circuit and datagram subnets (6M)
(OR)
6. a) What are the reasons for congestion? What are the problems with congestion? (6M)
b) Explain IP protocol (6M)

UNIT-IV

7. a) What is UDP and uses of UDP (6M)
b) Explain ports for UDP (6M)
(OR)
8. a) Discuss about TCP features (6M)
b) Explain TCP connection establishment. (6M)

UNIT-V

9. a) Write short notes on Electronic Mail. (6M)
b) How DNS service maps domain names to IP addresses. (6M)
(OR)
10. a) What is static web document (6M)
b) Discuss about HTTP (6M)

**DESIGN OF CONCRETE STRUCTURES
(Civil Engineering)****Time: 3 Hours****Max Marks: 70**

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a) Explain characteristic load, characteristic strength, load factors and safety factors. 6M
- b) Calculate maximum depth of N.A, limiting moment of resistance, limiting reinforcement and % of limiting reinforcement for a rectangular beam of size 230mmX450mm. The materials are M30 grade concrete and Fe550 grade steel. 8M

(OR)

2. A simply supported beam of size 230mmX450mm overall depth is reinforced with 3 no of 12mm diameter bars as a tension reinforcement. Calculate moment resistance of the section using limit state method and working stress method. The materials are M20 grade concrete and Fe415 grade steel. 14M

UNIT-II

3. Design for flexure and shear, a rectangular beam of cross section 300mmx600mm with an effective span of 5m Width of the support on each side shall be 300mm. The superimposed load on the beam is 36kN/m. use M20 concrete and Fe415 steel. Calculate the reinforcement at mid span section and quarter span section. Draw the reinforcement details accordingly. 14M

(OR)

4. A tee beam of effective flange width 900mm, thickness of slab 100mm, width of rib 300mm and effective depth of 560mm is reinforced with 4 - 25mm diameter bars as a tension reinforcement. Calculate factored moment resistance. The materials are M20 grade concrete and HYSD reinforcement of grade Fe 415. 14M

UNIT-III

5. Design a slab for a room of internal dimensions 5mX4m. Slab is subjected to a live load of 3.0kN/Sqm and surface finish of 1.5kN/Sqm. Consider concrete of grade M20 and HYSD steel of grade Fe415 subjected to mild environmental exposure. The thickness of brick masonry walls is 230mm. Draw reinforcement detail. Assume two adjacent edges are discontinuous. 14M

(OR)

6. A simply supported one way slab of span 3m is resting on opposite edges with a live load of 3 kN /Sqm. Materials used are M20 grade concrete and Fe415 grade steel. Design the slab. Draw reinforcement detail. 14M

UNIT-IV

7. a) Explain the interaction diagram of columns. 7M
b) A short R.C.C column of size 230mmX450mm has to carry an axial factored load of 1000kN. Assume $e_{min} < 0.05D$. Design the column using M20 grade concrete and HYSD reinforcement of grade Fe415. Draw reinforcement detail. 7M

(OR)

8. Design column for the following data: Column size: 300mmX450mm; Materials Grade :M25 & Fe415; Loads: $P_u=950\text{kN}$; $M_{ux}=50\text{kN-m}$; $M_{uy}=62\text{kN-m}$. Effective length of column is 6m and unsupported length of column is 7m. Draw reinforcement detail. 14M

UNIT-V

9. Design a square footing to carry a column load of 900 kN from a 450mm square column. The safe bearing capacity of the soil is 150 kN /Sqm. Consider base of footing at 1m below the ground level. The unit weight of earth is 20 kN /Cum. The materials are M20 grade and HYSD reinforcement of grade Fe415. Draw reinforcement detail. 14M

(OR)

10. Design a rectangular footing to carry a column load of 1200 kN, 15 kN-m & 20 kN-m from a 300mmX450mm column. The safe bearing capacity of the soil is 200 kN /Sqm. Consider base of footing at 1m below the ground level. The unit weight of earth is 20 kN /Cum. The materials are M25 grade and HYSD reinforcement of grade Fe415. Draw reinforcement detail. 14M

AR16

CODE: 16EE3016

SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech I Semester Supplementary Examinations, November-2021

**POWER ELECTRONICS
(Electrical and Electronics Engineering)**

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a) Explain the dynamic Characteristics of SCR 7M
- b) Explain how SCR is able to maintain conduction even after removal of gate pulse. 7M

(OR)

2. a) Discuss the necessity of connecting SCRs in series. List the problems associated with series connection of SCRs. Suggest few remedies to improve the performance of series connected SCR string. 7M
- b) SCRs with a rating of 1000V and 200A are available to be used in a string to handle 6kV and 1kA. Calculate the number of series & parallel units required if derating factor is 0.2. 7M

UNIT-II

3. a) Explain the operation of single phase fully controlled converter with RL load. Draw relevant waveforms and derive the expression for average output voltage. 7M
- b) Explain the operation single phase half wave controlled converter with R load. 7M

(OR)

4. Explain the effect of source inductance on the performance of single phase line commutated converter. 14M

UNIT-III

5. Explain the operation of three phase fully controlled converter with RL load under continuous conduction. Draw relevant circuit diagram & associated waveforms. 14M

(OR)

6. Explain the operation of single phase dual converter under circulating and non circulating current modes of operation with neat circuit diagram & relevant waveforms. 14M

UNIT-IV

7. a) A single phase ac voltage controller is employed for controlling the power flow from 230V, 50Hz source in to a load circuit consisting of $R=3\Omega$ and $\omega L=4\Omega$. Calculate the control range of firing angle and maximum value of rms load current. 10M
- b) Mention few drawbacks of cycloconverters. 4M

(OR)

8. a) Describe the basic principle of operation of single phase step down mid point cyclo converter with resistive load. 7M
- b) Explain the operation of ac voltage controller with R load. 7M

UNIT-V

9. a) Explain the principle of operation of Buck Boost Converter with neat circuit diagram. 7M
- b) A step-up chopper has input voltage of 220 V and output voltage of 660 V. If the non- conducting time of thyristor-chopper is 100 μs , compute the pulse width of output voltage. Incase pulse width is halved for constant frequency operation, find the new output voltage. 7M

(OR)

10. Explain the operation of 180° conduction mode three phase voltage source inverter. Draw the waveforms of phase voltages & line voltages. 14M

AR16

CODE: 16ME3015

SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech I Semester Supplementary Examinations, November-2021

METAL CUTTING AND MACHINE TOOLS (Mechanical Engineering)

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a) Explain types of chips in metal cutting with neat sketches and specify the conditions favouring those chips. 7M
- b) What is the effect of cutting speed, depth of cut and feed rate on the force on cutting tool 7M

(OR)

2. a) During an orthogonal cutting a chip length of 160mm was obtained from an uncut chip length of 350 mm. The cutting tool has 22° rake angles and a depth of cut is 0.8mm. Determine the shear plane angle and chip thickness 7M
- b) What are the factors influencing in selection of cutting speeds and feeds for machining operation 7M

UNIT-II

3. a) Explain briefly the following lathe operations:- 8M
 - i) Threading (ii) Knurling (iii) Forming
 - iv) Taper turning v) Facing
 - b) Differentiate between single spindle and multi spindle automatic lathes 6M
- (OR)**
4. a) With a block diagram, explain the method of taper turning by tail stock set over method 8M
 - b) Explain any two tool holding devices in lathe machine 6M

UNIT-III

5. a) Discuss in detail the following with neat sketches: 8M
 - a) Multi spindle drilling machine b) Twist drill
 - b) State the advantages, limitations and applications of planer 6M
- (OR)**
6. a) With a neat sketch, explain the processing of producing horizontal flat surface by using a Shaper 8M
 - b) Explain the following operations with help of neat sketches. 6M
 - i) Boring ii) Counter sinking liii) Counter boring

UNIT-IV

7. a) What is surface grinding? Explain 6M
b) Explain in detail about centre less grinding process 8M
(OR)
8. Explain briefly following processes with neat sketch: (i) Honing (ii) Lapping (iii) Super finishing 14M
(iv) Polishing (v) Buffing (vi) Gear hobbing

UNIT-V

9. a) Explain the different types of fits used in engineering practice with neat sketches 7M
b) State and explain the “Taylor’s principle of gauge design’. Explain the following in connection with gauge design: (i) Gauge maker’s tolerance 7M
(ii) Wear allowance
(OR)
10. a) Explain the following terms 7M
i) Selective assembly ii) Interchangeability
iii) Tolerance (iv) hole basis and shaft basis system
b) Shafts of 85 ± 0.03 mm diameter are to be checked by the help of a Go, Not Go snap gauges. Design the gauge, sketch it and show its Go size and Not Go size dimensions. Assume normal wear allowance and gauge maker’s tolerance 7M

AR16

CODE: 16HS3005

SET-2

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech I Semester Supplementary Examinations, November-2021

**MANAGERIAL ECONOMICS AND MANAGEMENT SCIENCE
(Electronics and Communication Engineering)**

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a) What are the Factors governing Demand Forecasting 7M
b) Discuss in detail about statistical methods 7M
(OR)
2. a) Discuss the Law of demand, its Exceptions 7M
b) What is Elasticity of Demand, Explain the various Elasticities 7M

UNIT-II

3. a) Explain the Least Cost Combination of Inputs 7M
b) Discuss the Laws of Returns 7M
(OR)
4. a) Enumerate Economies to Scales 7M
b) Briefly explain the Production Function, with one variable Proportion 7M

UNIT-III

5. a) What are the Features of Perfect competition 7M
b) Explain the Concept on different pricing strategies. 7M
(OR)
6. a) Discuss in detail about monopolistic competition 7M
b) What is Monopoly, Explain the Price Determination under Monopoly 7M

UNIT-IV

7. a) Explain the Douglas McGregor's Theory X and Theory Y 7M
b) What is the role of Leadership Styles 7M
(OR)
8. a) Explain the Fayol's Principles of Management 7M
b) Discuss in detail about functions of Management. 7M

UNIT-V

9. a) Define Marketing, explain Marketing Mix 7M
b) Discuss the Marketing Strategies based on PLC 7M
(OR)
10. a) Explain the Job Evaluation and Merit Rating 7M
b) How do you understand Selection, Training and Development 7M

AR16

CODE: 16CS3012

SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech I Semester Supplementary Examinations, November-2021

COMPUTER NETWORKS (Common to CSE & IT)

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. a) Explain various uses of computer networks. 7M
- b) Categorize computer networks based on inter computer distance and explain the purpose of each of them. 7M

(OR)

2. a) Compare OSI and TCP/IP reference models. 7M
- b) How do you uniquely identify applications running on a remote computer? 7M

UNIT-II

3. a) Write a short notes on the following protocols 7M
(i) GO BACK N (ii) Selective Repeat
- b) What are the different types of ALOHA? Explain. 7M

(OR)

4. a) Illustrate the concept of framing with a neat diagram. 7M
- b) List and Explain various error correcting codes. 7M

UNIT-III

5. a) Explain hierarchical routing problem with suitable example? 7M
- b) Define congestion. Mention the names of various congestion control mechanisms? 7M

(OR)

6. a) Compute shortest path in an example graph using Dijkstra's algorithm 7M
- b) What are the advantages of using dynamic routing algorithms? 7M

UNIT-IV

7. a) Draw and explain connection management process in TCP? 7M
- b) Explain the uses of UDP? 7M

(OR)

8. a) What are the contents of a UDP header? Explain each of them. 7M
- b) Compare TCP with UDP based on various communication parameters 7M

UNIT-V

9. a) What is domain name space? Explain different categories of domains 7M
- b) Differentiate between static web pages and dynamic web pages based on technologies used 7M

(OR)

10. a) Write a sample HTML page to display a list of Grocery Items and their prices in a table. 7M
- b) What are the different HTTP methods that can be used in communicating with a server 7M

AR13

CODE: 13EC3016

SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech I Semester Supplementary Examinations, November-2021

LINEAR DIGITAL INTEGRATED CIRCUITS (Electrical and Electronics Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1.
 - a) List out the ideal characteristics of OPAMP?
 - b) Define Slew rate.
 - c) Mention some of the linear applications of op – amps?
 - d) Draw the logic diagram of half adder.
 - e) Draw the frequency response for a first order HPF.
 - f) What happens when the common terminal of V+ and V- sources is not grounded?
 - g) Draw the truth table of JK-flipflop.
 - h) Draw the pin diagram of 555 timer.
 - i) Draw the transistor logic diagram for AND logic.
 - j) Write applications of multiplexer?

PART-B

Answer one question from each unit

[5 x 12=60M]

UNIT-I

2.
 - (a) Compare and contrast an ideal Op-amp and practical Op-amp.. [6 M]
 - (b) Why is it necessary to use an external offset voltage compensating network with practical Op-amp circuits? [6 M]

(OR)

3.
 - (a) List and explain the function of all the basic building blocks of an op-amp. [6M]
 - (b) Explain any one of the frequency compensation technique in connection with Op-amp. [6M]

UNIT-II

4.
 - (a) Explain the working of an instrumentation amplifier with a circuit. Give its characteristics and applications? [6 M]
 - (b) Draw and explain Voltage to current converter. [6 M]

(OR)

5.
 - (a) Draw and explain basic differentiator and practical differentiator using Op-Amp [7 M]
 - (b) Explain the working of schmitt trigger. [5 M]

AR13

CODE: 13EC3016

SET-1

UNIT-III

- 6 Explain the functional block diagram of PLL emphasizing the importance of capture range and Lock range. [12M]

(OR)

- 7 Derive the transfer function, gain and phase angle for first order and second order low pass active filter. [12 M]

UNIT-IV

- 8 (a) Draw and Explain Inverted R-2R ladder DAC. [6 M]
(b) Draw and explain Successive Approximation A/D converter. [6 M]

(OR)

- 9 (a) Draw the circuit of 2- input NAND gate using TTL. With the help of truth table explain its operation. [7 M]
(b) Explain sinking current and sourcing current of TTL output? Which of the Above parameters decide the fan out and how? [5 M]

UNIT-V

- 10 (a) Explain 4-bit Serial in-serial out shift register with its logic block diagram. [6 M]
(b) Write short notes on Master slave JK flip flop. . [6 M]

(OR)

- 11 (a) Design a 4 bit Gray to Binary code converter [8 M]
(b) Distinguish between Combinational circuits and sequential circuits. [4M]

2 of 2
