

**TRANSPORTATION ENGINEERING-I
(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

Design charts are allowed

Assume any required data

UNIT-I

- | | | |
|-------------|---|---|
| 1. a) | Explain briefly about Lucknow twenty year road development plans? | 8 |
| b) | Enumerate the role of highway engineering in india. | 6 |
| (OR) | | |
| 2. a) | Explain different road network patterns with neat sketch | 9 |
| b) | What are the factors influencing the highway alignment. | 5 |

UNIT-II

- | | | |
|-------------|--|---|
| 3. a) | Derive an expression for OSD. | 7 |
| b) | The speeds of overtaking and overtaken vehicles are 65 and 30kmph respectively on a two-way road. If the acceleration of overtaking vehicle is 0.91m/s^2
(i) Calculate safe overtaking sight distance (ii) Mention the minimum length of overtaking zone | 7 |
| (OR) | | |
| 4. a) | Compare the three types of transition curves. | 7 |
| b) | Explain the vertical curves with neat sketches. | 7 |

UNIT-III

- | | | |
|-------------|---|---|
| 5. a) | Describe the procedures of any two laboratory tests on aggregates . | 8 |
| b) | Write the properties of bitumen. | 6 |
| (OR) | | |
| 6. a) | Write the properties of aggregate. | 5 |
| b) | Explain Marshalls Method of Mix design. | 9 |

UNIT-IV

- | | | |
|-------------|--|---|
| 7. a) | Write about volume surveys. | 7 |
| b) | Explain condition and collision diagram with neat sketches. | 7 |
| (OR) | | |
| 8. a) | Differentiate the angular parking and perpendicular parking. | 7 |
| b) | What is meant by black spots. Mention the causes of accidents. | 7 |

UNIT-V

- | | | |
|-------------|---|---|
| 9. a) | Describe the elements of round about with an example. | 7 |
| b) | Draw the sketches of various types of grade separated intersection. Write its advantages. | 7 |
| (OR) | | |
| 10. a) | With the help of a neat sketch give significance of clover leaf type of intersections. | 7 |
| b) | Evaluate few measures of an uncontrolled intersection in a metro cities. | 7 |

AR16

CODE: 16EC3015

SET-2

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

III B.Tech I Semester Supplementary Examinations, January-2019

**FUNDAMENTALS OF SIGNALS AND SYSTEMS
(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) $y(n) = \log_{10} |x(n)|$ Find the what type of system it is ? 7M
b) Find the period of the signals 7M
(i) $\sin^2 t$ (ii) $\cos 2t + \cos 5t$
(OR)
2. a) Find the even and odd part of the signal defined as $x(t) = (1+t^3) \cos^3 10t$ 7M
b) Write the properties of impulse function 7M

UNIT-II

3. a) Find discrete convolution of sequences $x[n] = \{1, 4, 3, 2\}$ and $h[n] = \{1, 3, 1, 2\}$ 7M
b) How to convert a continuous signal into discrete signal prove with help of a mathematical expressions? 7M
(OR)
4. a) State and prove the convolution theorem 7M
b) Find the convolution of the signals using convolution integral 7M
 $X(t) = e^{-3t} u(t)$ and $h(t) = u(t+3)$

UNIT-III

5. a) Find the Fourier transform of the signal $x(t) = [u(t+2)-u(t-2)] \cos 2\pi t$ 7M
b) State and prove the convolution property of Fourier transform 7M
(OR)
6. a) Find the Fourier series expansion of the full wave rectified sine wave 7M
b) What is wave symmetry and explain different types of symmetry? 7M

UNIT-IV

7. a) Determine the Laplace transform of the causal signal $x(t) = e^{-at} u(t)$ and depict the ROC and locations of poles and zeros in the S-plane 7M
b) Determine the Laplace transform of unit step, unit impulse and unit ramp signals 7M
(OR)
8. a) Find the step and impulse response of a series RLC circuit 7M
b) Find inverse Laplace transform of (i) $1/(s+1)^2$ (ii) $s/((s+2)^2+1)$ 7M

UNIT-V

9. a) Determine the z-transform of the anti causal signal $x(n) = -a^n u(-n-1)$ 7M
b) Using long division method determine the Z-transform of $X(z) = (z^2+2z)/(z^3-3z^2+4z+1)$ 7M
(OR)
10. a) Determine the inverse z transform of the function $X(z) = z/(z-0.5)$; $|z| > 0.5$ 7M
b) Write the properties of ROC in Z -plane 7M

AR16

CODE: 16ME3016

SET-1

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

III B.Tech I Semester Supplementary Examinations, January-2019

**AUTOMOBILE ENGINEERING
(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) Compare and contrast super charging and turbo charging in Automobile Engines. 5
b) Explain construction and working principle of pressure lubrication system with neat diagram. 9

(OR)

2. a) Explain 3 way catalytic convertor with a neat sketch? 8
b) What is meant by crank case dilution? Explain how it is prevented by crank case ventilation 6

UNIT-II

3. a) Explain the components of fuel supply system for petrol engine. 6
b) Explain about simple carburettor. What are its limitations? 8

(OR)

4. a) Give the diametrical sketch of Common Rail injection System and explain its operation. 10
b) Explain the working principle of an Electrical fuel pump. 4

UNIT-III

5. a) Explain the necessity of engine cooling. Discuss different methods of engine cooling. 6
b) Explain the battery ignition system with neat sketch. 8

(OR)

6. a) What are the essential qualities of anti-freeze additives? 5
b) Draw a neat line diagram of the ignition and distributor system and describe how it works. 9

UNIT-IV

7. a) Explain the working principle of Bendix drive mechanism. 9
b) With a simple line sketch describe the gear shift mechanism in a car gear box. 5

(OR)

8. a) Describe the working of the generator and the storage battery in supplying the electrical energy in an automobile. 8
b) Explain about components of transmission system in detail. 6

UNIT-V

9. a) Describe Ackerman and Davis steering mechanisms. What are their relative merits? 9
b) Describe the functions of the rear axle in an automobile. 5

(OR)

10. a) Explain the construction of rigid axle suspension system with sketch. 8
b) Explain different types of steering mechanisms used in an automobile. 6

AR16

CODE: 16HS3005

SET-2

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

III B.Tech I Semester Supplementary Examinations, January-2019

**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) Write a brief note on Determinants of Demand 7M
b) In your opinion, does the Law of Demand is applicable to all the products? If not, explain any three situations where Law of Demand does not hold 7M
- (OR)**
2. a) Explain Price elasticity of Demand and illustrate it's types 7M
b) What is Demand Forecasting and how do you forecast demand by using Test Marketing and Survey Methods 7M

UNIT-II

3. a) Briefly explain the production function with two variables 7M
b) Define Economies of Scale and Explain External Economies of Scale 7M
- (OR)**
4. a) Explain the Laws of Returns 7M
b) Differentiate Explicit Cost with Implicit Cost and also Out of the Pocket Cost with Imputed Cost 7M

UNIT-III

5. a) What is a Monopoly market and discuss its features 7M
b) Discuss the price output determination under Monopoly 7M
- (OR)**
6. a) Describe the types of Competition 7M
b) What is Optimal Pricing, Competition Pricing and Bundle Pricing and Explain with examples 7M

UNIT-IV

7. a) Describe the Planning, Staffing and Directing Functions of Management 7M
b) Analyze the Herzberg's theory of Motivation 7M
- (OR)**
8. a) Explain the Taylor's Scientific Management Theory 7M
b) Describe the McGregor's theory of Motivation 7M

UNIT-V

9. a) Examine the typical Marketing decisions concerning to Marketing Mix 7M
b) Classify the functions of Marketing 7M
- (OR)**
10. a) Discuss the concept of Training and Development 7M
b) Explain Personnel Management concept 7M

**DESIGN AND ANALYSIS OF ALGORITHMS
(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 Space complexity and Time complexity with an examples 7M
- b) Develop an algorithm for finding the average of an natural numbers and derive time complexity. 7M

(OR)

2. a) Explain various asymptotic notations used to represent complexity of algorithms with an example? 8M
- b) Design an algorithm for sum of N natural numbers and find time complexity. 6M

UNIT-II

3. a) Explain the concept of Divide and Conquer? 7M
- b) What is knapsack problem? Find an optimal solution to the knapsack instance $n=7$ & $m=15$, $(p_1 \text{ to } p_7)=\{10,5,15,7,6,18,3\}$ and $(w_1 \text{ to } w_7)=\{2,3,5,7,1,4,1\}$ 7M

(OR)

4. a) What is the advantage of Strassen's matrix multiplication? Explain it with example and derive it's time complexity? 7M
- b) Write the differences between Divide and conquer and Greedy methods. 7M

UNIT-III

5. a) Explain the concept of dynamic programming? 6M
- b) Find the optimal sequence of matrix multiplications and also the no of multiplications needed to find the product of A, B, C, D matrices given $P_0 = 15$, $P_1 = 41$, $P_2 = 16$, $P_3 = 22$ and $P_4 = 27$. 8M

(OR)

6. Construct the OBST for following instance $n=4$ and identifier 14M
Set(a_1, a_2, a_3, a_4)=[cout,float,if,while] with $p[1:4]=[3,3,1,1]$
and $q[0:4]=[2,3,1,1,1]$

UNIT-IV

7. a) Explain the Depth First Search Traversal with an example and 7M
give its applications.
b) Write the general method of backtracking and design an 7M
algorithm for graph coloring problem?
- (OR)
8. a) Let $w=\{15,7,20,5,18,10,12\}$ and $m=35$, find all possible 7M
subsets of w that sum to m using sum of subsets algorithm.
Draw the portion of the state space tree that is generated
b) Describe the Graph Coloring problem & its time complexity? 7M

UNIT-V

9. a) What is a bounding function? Explain how these bounds are 5M
useful in Branch & Bound methods?
b) State and Explain Cook's theorem? 9M
- (OR)
10. Consider the Travelling sales person instance defined by 14M
cost matrix

$$\begin{bmatrix} \infty & 20 & 30 & 10 & 11 \\ 15 & \infty & 16 & 4 & 2 \\ 3 & 5 & \infty & 2 & 4 \\ 19 & 6 & 18 & \infty & 3 \\ 16 & 4 & 7 & 16 & \infty \end{bmatrix}$$

- a) Obtain Reduced Cost Matrix
b) Construct dynamic state space tree that will be
generated by using LCBB method

AR13

CODE: 13CE3011

SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech I Semester Supplementary Examinations, January-2019

TRANSPORTATION ENGINEERING-I (Civil Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) What are classified roads in Nagpur plan
- b) Write a short notes on IRC and CRRI
- c) Define Super elevation
- d) Define stopping sight distance
- e) List Various factors that govern geometric design of highways
- f) List out various types of road markings
- g) Define Journey speed and Running speed
- h) Mention any four causes for road accidents
- i) Explain the term "Conflicts at Intersection"
- j) Draw a neat sketch of centre line marking

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) Explain Jayakar committee recommendations 6M
- b) Discuss various road patterns with neat sketch. 6M
- (OR)
3. a) Explain various factors controlling highway alignment with neat sketch 6M
- b) Write a detailed note on various engineering surveys to be carried out for highway alignment 6M

(OR)

UNIT-II

4. Write a detailed note on various cross section elements considered in geometric design of pavement. 12M
- (OR)**
5. a) Derive an expression for extra widening on curves with a neat sketch. 6M
- b) Calculate the overtaking sight distance required if the speed of overtaking vehicle is 100Km/hr and speed of overtaken vehicle is 80Km/hr and reaction time is 2.5 seconds. Assume any other data required. 6M

UNIT-III

6. a) Explain concept of three 'E' s involved in Accident prevention 6M
- b) Explain the objectives and application of spot speed studies 6M
- (OR)**
7. a) Write a detailed note on various methods of on street parking 6M
- b) Write a detailed note on various basic parameters of traffic 6M

UNIT-IV

8. a) Explain in detail the advantages and disadvantages of road traffic signs 6M
- b) Explain Webster method of signal design in detail 6M
- (OR)**
9. a) Explain in detail the advantages and disadvantages of road Markings 6M
- b) Explain IRC method of signal design. 6M

UNIT-V

10. a) Explain different types of intersections 6M
- b) Explain various design considerations of rotary 6M
- (OR)**
11. a) Explain various advantages and disadvantages of at grade and grade separated intersections. 6M
- b) Explain various type of traffic islands used 6M

Time: 3 Hours**Max Marks: 70****PART-A****ANSWER ALL QUESTIONS****[1 x 10 = 10 M]**

1. a) Check for periodicity of $\cos(0.01\pi n)$.
- b) When is a System said to be memory less? Give Example.
- c) What are the Dirichlet's conditions of Fourier series?
- d) Show that $f(x) = 1, 0 < x < \infty$ cannot be represented by a Fourier integral.
- e) Find the Fourier transform of $x(t) = e^{j2\pi ft}$?
- f) What is the relationship between Z transform and fourier transform.
- g) What is the use of Laplace transform?
- h) State Initial and Final value Theorem of Laplace Transforms.
- i) Define unilateral and bilateral Z transform.
- j) What is z transform of sequence $X(n)=a^n u(n)$

PART-B**Answer one question from each unit****[5x12=60M]****UNIT-I**

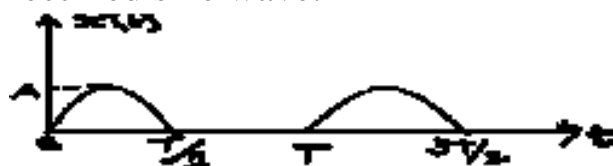
2. a Find the input $x(n)$ of the system, if the impulse response $h(n)$ 6M
and the output $y(n)$
as shown below. $h(n) = \{1, 2, 3, 2\}$ $y(n) = \{1, 3, 7, 10, 10, 7, 2\}$
- b Find the power and RMS value of signal $x(t)=20\cos 2\pi t$. 6M

(OR)

3. a What is Impulse Response? Show that the Response of an 6M
LTI system is
convolution Integral of its impulse Response with input
signal?
- b Find the even and odd parts of the following signal 6M
 $x(t) = 3\sin 2t + 5\cos 4t + 9(\sin 3t)(\cos t)$

UNIT-II

4. a Obtain the trigonometric Fourier series for the half wave 6M
rectified sine wave.



- b Find the trigonometric fourier series representation of a periodic square wave 6M
 $x(t) = 1$, for the interval $(0, \pi)$.
 $= 0$, for the interval $(\pi, 2\pi)$

(OR)

5. a State and prove any three properties of Fourier series 6M
 b Distinguish between Fourier series Analysis and Fourier Transforms 6M

UNIT-III

6. a State and prove any four properties of Fourier Transform 6M
 b Determine the Fourier transform of a two sided exponential pulse $x(t) = e^{-|t|}$. 6M

(OR)

7. a Find the Fourier Transform of $f(t) = t \cos(2t)$. 6M
 b Find the Fourier transforms of an even function $x_e(t)$ and odd function $x_o(t)$ of $x(t)$. 6M

UNIT-IV

8. a Find the Laplace transform of $x(t) = -e^{-at}u(-t)$ and indicate its ROC. 6M
 b Determine the initial value and final value of signal $x(t)$ 6M

whose Laplace Transform is, $X(s) = \frac{2s+5}{s(s+8)}$

(OR)

9. a Find the inverse Laplace transform of for the ROCs. 6M
 $X(s) = \frac{1}{(s+5)(s-3)}$ (i). $-5 < \text{Re}\{s\} < 3$ (ii). $\text{Re}\{s\} < 3$
 b What is the relation between L.T, and F.T. of a signal 6M

UNIT-V

10. a Determine the Z Transform of the Signal 6M
 (i) $x(n) = \{1, 2, 0, 2\}$ (ii) $x(n) = \{1, 2, -1, 2, 9\}$
 (iii) $x(n) = u(n) - u(n-5)$
 b Prove the differentiation property of Z-transform. Explain the concept of ROC in Z transform. 6M

(OR)

11. a Find the inverse z-Transform of i) $X(z) = 1/(1-0.5z^{-1}+0.5z^{-2})$ for ROC $Z > 1$ ii) $1/(z^2 - 1.2z + 0.2)$ 6M
 b Find the Z-transform of the given signal $x(n)$ and find ROC: 6M
 $X(n) = [\sin(w_0 n)] u(n)$

**CAD/CAM
(Mechanical Engineering)****Time: 3 Hours****Max Marks: 70****PART-A****ANSWER ALL QUESTIONS****[1 x 10 = 10 M]**

1. a) List various Screen coordinate systems.
- b) What do you mean by Stroke writing?
- c) What is Wire frame model?
- d) Give any two examples for solid models.
- e) What do you mean by Turning cycle?
- f) Compare NC and CNC.
- g) Mention various methods for identifying part families.
- h) List the benefits of Group Technology.
- i) List various CAPP systems.
- j) Define FMS.

PART-B**Answer one question from each unit****[5x12=60M]****UNIT-I**

2. a) Describe the basic hardware structure of a digital computer with the help of block diagram. 6M
- b) List various types of output devices and explain about any two of them with neat diagrams. 6M

(OR)

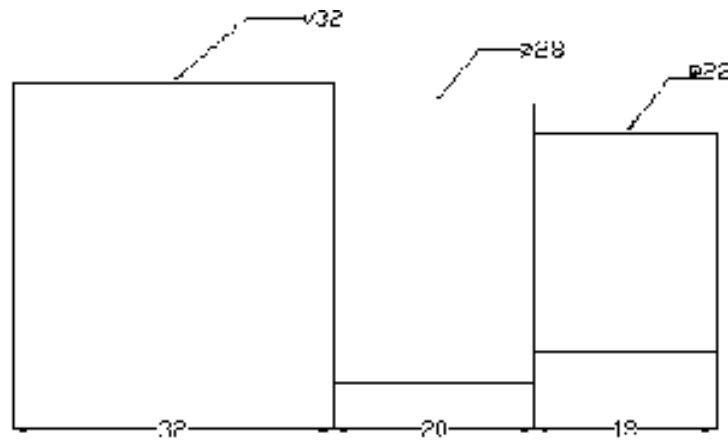
3. a) Perform a 30° rotation of the triangle A (0,0), B (1,2), C (5,2) about origin ii) about point P(-1,-2). 6M
- b) Construct a 2D transformation matrix in homogeneous coordinates of the given sequence. 6M
 - a) Rotation around the origin by 75°
 - b) Translate by (-3,5)

UNIT-II

4. a) Distinguish between synthetic and analytical curves and mention the characteristics of Bezier curve. 6M
 - b) Compare surface modeling with wire frame modeling. 6M
- (OR)**
5. a) What are the various types of surfaces? Briefly explain them with neat diagrams. 6M
 - b) Compare B-rep and CSG technique in solid modeling. 6M

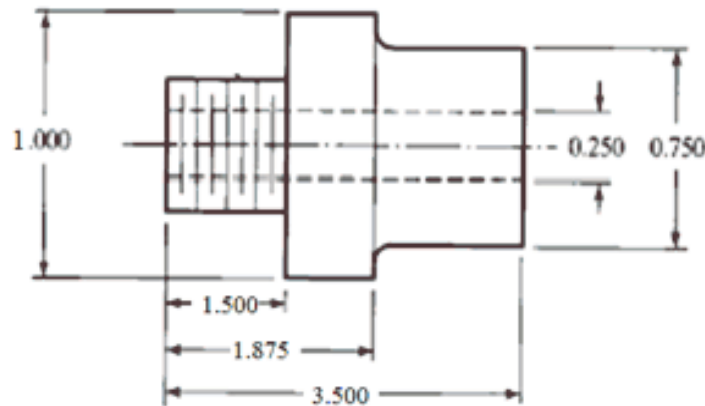
UNIT-III

6. a) Discuss about Types of NC control systems. 6M
 - b) Write a CNC part program by considering taper turning, grooving & thread cutting on Lathe machine by taking suitable example. 6M
- (OR)**
7. a) What are the advantages of CNC over the conventional methods of manufacturing? 6M
 - b) Prepare Part Programming for the following Stepped bar shown in below figure. 6M



UNIT-IV

8. a) Explain in brief about MICLASS Coding System used in Group Technology. 6M
 b) Develop the Form Code using OPITZ Coding System for the part illustrated in Figure below. 6M



(OR)

9. a) Briefly discuss various terminologies involved in group technology. 4M
 b) Apply the Rank Order Clustering technique to the machine-part incidence matrix in the following table to identify logical part families and machine groups. Parts are identified by letters, and machines are identified numerically. 8hM

Machines	Parts					
	A	B	C	D	E	F
1	1	0	0	0	1	0
2	0	0	0	1	0	1
3	1	1	0	0	0	0
4	0	0	1	1	0	0
5	0	1	0	0	1	0
6	0	0	1	1	0	1

UNIT-V

10. a) With a neat sketch, explain about flow of information in Variant CAPP system. 6M
 b) Explain in detail about Generative CAPP system. 6M
- (OR)
11. a) Discuss various functions of material handling and storage systems in FMS. 6M
 b) Explain Ladder Layout configuration with a neat sketch. 6M

**ANTENNAS AND WAVE PROPAGATION
(Electronics and Communication Engineering)****Time: 3 Hours****Max Marks: 70****PART-A****ANSWER ALL QUESTIONS****[1 x 10 = 10 M]**

1. a) Define retarded vector potential.
- b) The power radiated by a half-wave dipole antenna is 146 W. Find out the rms current at the input terminals of the half-wave dipole antenna assuming negligible antenna loss.
- c) Draw the field pattern of an array of two point source antennas excited with equal amplitudes and equal phase.
- d) Write the expression for beam width of broadside and end fire arrays.
- e) In which aspect rhombic antenna is better than V – antenna?
- f) State two applications of helical antenna.
- g) What do you know about aperture blocking in parabolic reflector?
- h) Why do the reflector antennas have higher directive gain when compared with wire antennas?
- i) What is virtual height?
- j) What is duct propagation?

PART-B**Answer one question from each unit****[5x12=60M]****UNIT-I**

2. a) Derive the expression for total power radiated by an antenna over the entire solid angle. 6M
 - b) The radial component of the power density of an infinitesimal linear dipole of length $l \ll \lambda$ is given by $W_r = A_0 (\sin^2 \theta) / r^2 \text{ W/m}^2$ 6M
where A_0 is the peak value of the power density. Determine the maximum directivity of the antenna.
- (OR)**
3. a) The radiation pattern of an antenna in spherical co – ordinates is given by $F(\theta) = \cos 4\theta$; $0 \leq \theta \leq \pi/2$. Find the directivity. 6M
 - b) The radiation resistance of a circular loop of one turn is 0.01Ω . 6M
Find the radiation resistance of five turns of such loop.

UNIT-II

4. a) Specify the difference in feeding the elements of binomial array from other arrays. What are the advantages and disadvantages of binomial array? 6M
- b) Draw the radiation pattern of an array of 4 isotropic elements, spaced $\lambda/2$ apart and are fed in phase. 6M

(OR)

5. a) Discuss the salient features of endfire array. 6M
- b) Find the beam width between first nulls in a broad side array of 20 isotropic radiators, equally spaced at a distance of $\lambda/2$. 6M

UNIT-III

6. a) Distinguish between axial mode and radial mode of radiation of Helical Antenna. 6M
- b) Make a comparison in the performances of long wire, V and Rhombic antennas. 6M

(OR)

7. a) Write a brief notes about design of Rhombic antenna. State the advantages and disadvantages of rhombic antenna. 6M
- b) Write a brief notes about V-Antenna. What are the advantages of inverted V antenna? 6M

UNIT-IV

8. a) Present a brief report on the performance of different reflector antennas. 6M
- b) What are the benefits of Cassegrain dual reflector system? 6M

(OR)

9. a) What is the significance of the input impedance of an antenna? What are the advantages having large input impedance for a given antenna? 6M
- b) Design an experimental set up to measure the radiation pattern of a given antenna and explain the measurement procedure. 6M

UNIT-V

10. a) How wave propagations are classified based on the frequency of operation? Explain Space wave propagation. 6M
- b) Briefly explain multi hop transmission. 6M

(OR)

11. a) Explain the structure of Ionosphere. 6M
- b) Briefly explain about ionospheric abnormalities. 6M

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

III B.Tech I Semester Supplementary Examinations, January-2019

**DESIGN AND ANALYSIS OF ALGORITHMS
(CSE Branch)**

PART-A

ANSWER ALL QUESTIONS

[1 X 10 = 10M]

1. a) What is Big-oh-notation
b) What is time complexity?
c) What are Bio-connected components?
d) Define recursion?
e) Define Greedy method.
f) Distinguish between Algorithm and Pseudocode.
g) What is a spanning tree
h) Define Bounding Function
i) What is feasibility function
j) Define Branch and Bound

PART – B

Answer one question from each unit

[5 X 12 = 60M]

UNIT – I

2. (a) Categorize the methods that were used to perform Amortized Analysis [6M]
(b) Differentiate between Bigoh and omega notation with example. [6M]

(OR)

3. (a) Explain DFS with example [6M]
(b) Explain the performance Analysis [6M]

UNIT- II

4. Explain differences between Prim's and Kruskal's Minimum spanning Tree algorithm. [12M]
Derive the time complexity of Kruskal's algorithm.

(OR)

5. (a) What are the advantages and disadvantages of Divide – And – Conquer? [4M]
(b) Implement the Merge sort algorithm to sort the given array of elements in non-decreasing order using Divide and Conquer Technique.
i. 134, 435, 235, 812, 381, 527, 912, 43, 278,444 [8M]

UNIT – III

6. (a) Define dynamic programming give the solution for the problem of Reliability design and derive its time complex. [6M]
(b) Explain Reliability Design Problem with suitable example. [6M]

(OR)

7. Explain how Matrix – chain Multiplication problem can be solved using dynamic programming with suitable example. [12M]

UNIT – IV

8. Explain the Graph – coloring problem. And draw the state space tree for m= 3 colors n=4 vertices graph. Discuss the time and space complexity. [12M]

(OR)

9. (a) Describe back tracking technique to fast Fourier transformer [6M]
(b). Discuss the time and space complexity of Dynamic Programming traveling sales person algorithm. [6M]

UNIT – V

10. (a) Explain COOK’S Theorem in detail [6M]
(b) What are deterministic and non-deterministic algorithms give examples. [6M]

(OR)

11. Explain travelling sales person problem LCBB procedure with the following instance and draw the portion of the state space tree and find an optimal tour. [12M]

$$\begin{bmatrix} \infty & 20 & 30 & 10 & 11 \\ 15 & \infty & 16 & 4 & 2 \\ 3 & 5 & \infty & 2 & 4 \\ 19 & 6 & 18 & \infty & 3 \\ 16 & 4 & 7 & 16 & \infty \end{bmatrix}$$

AR13

SUB CODE: 13EC3019 SET-1
ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Supplementary Examinations, January-2019

MICROPROCESSOR AND MICROCONTROLLERS (Information Technology)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) Differentiate microprocessor and micro controller.
b) What is the clock frequency of 8086 microprocessor?
c) Write the procedure to calculate 20 bit effective address?
d) What is the size of address bus in 8086 microprocessor?
e) Write flags of 8086 microprocessor?
f) Define procedure.
g) What is interrupt?
h) List different data transfer instructions?
i) What is the use of segment register?
j) How many interrupts are supported by 8086 microprocessor?

UNIT -I

2. a. Explain the architecture of 8086 microprocessor with neat diagram. 6M
b. What is segmentation? Explain 8086 memory segmentation. 6M

(OR)

3. a. Explain Assembler directives. 6M
b. Explain 8086 pins & signals diagram. 6M

UNIT -II

- 4 .a. Explain processor control instructions? 6M
b. Explain 8086 stack segment. 6M

(OR)

5. a. Discuss in detail about interrupt vector table. 6M
b. Write an ALP to find the largest no in the given array of nos. 6M

UNIT -III

6. a. Explain 80386 Architecture. 6M
b. Explain the procedure to calculate the physical address of 80386 microprocessor. 6M

(OR)

7. a. Explain signal description of 80386 microprocessor. 6M
b. Explain different modes of operations in 80386 microprocessor. 6M

UNIT -IV

8. Explain 8255 PPI with block diagram and its modes of operation. 2M
(OR)
9. Explain Programmable communication interface (USART) in 8251. 12M

UNIT -V

10. a. Explain 8051 Architecture. 6M
b. Explain 8051 addressing modes. 6M

(OR)

11. a. Discuss special functional registers. 6M
b. Explain briefly about PIC micro controller. 6M