

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. Let X be the set of players of different games and A be the set of cricket players, B be the set of football players and C be the set of hockey players, defined by 14M

$$A = \{(x_1, 0.8), (x_2, 0.6), (x_3, 0.5), (x_4, 0.4), (x_5, 0.1)\}$$

$$B = \{(x_1, 0.6), (x_2, 0.1), (x_3, 0.5), (x_4, 0.7), (x_5, 0.9)\}$$

$$C = \{(x_1, 0.3), (x_2, 0.5), (x_3, 0.2), (x_4, 0.6), (x_5, 0.8)\} \text{ show that } (i) (A \cup B)^c = (A^c) \cap (B^c)$$

$$(ii) (A \cup B) \cup C = A \cup (B \cup C) \quad (iii) (A \cap B) \cap C = A \cap (B \cap C)$$

$$(iv) A \oplus B = (A^c \cap B) \cup (A \cap B^c) \quad (v) (A^c)^c = A$$

(OR)

2. a) Given two fuzzy sets $A = \{(x_1, 0.3), (x_2, 0.6), (x_3, 0.8)\}$ 7M

$$B = \{(y_1, 0.4), (y_2, 0.5), (y_3, 0.7), (y_4, 0.9)\} \text{ defined on } X = \{x_1, x_2, x_3\} \text{ and}$$

$$Y = \{y_1, y_2, y_3, y_4\} \text{ respectively. Determine the fuzzy relation } R = A \times B.$$

- b) Find $R \circ S$ if $R = \begin{bmatrix} 0.5 & 0.6 \\ 0.8 & 0.4 \end{bmatrix}$ and $S = \begin{bmatrix} 0.6 & 0.4 & 0.3 \\ 0.2 & 0.5 & 0.8 \end{bmatrix}$ Using max-min composition. 7M

UNIT-II

3. a) Describe about Generalized Modus Ponens rule. 7M

- b) Given two fuzzy sets $A = \{(x_1, 0.4), (x_2, 0.2), (x_3, 0.5)\}$ 7M

$$B = \{(y_1, 0.9), (y_2, 0.7)\} \quad A' = \{(x_1, 0.5), (x_2, 0.8), (x_3, 0.7)\} \text{ defined on } X = \{x_1, x_2, x_3\} \text{ and}$$

$$Y = \{y_1, y_2\} \text{ respectively then Determine } B' \text{ by using Generalized Modus Ponens rule}$$

(OR)

4. a) Describe about Generalized Modus Tollens rule. 7M

- b) Given two fuzzy sets $A = \{(x_1, 0.5), (x_2, 0.9), (x_3, 0.6)\}$ 7M

$$B = \{(y_1, 0.8), (y_2, 1)\} \quad B' = \{(y_1, 0.4), (y_2, 0.6)\} \text{ defined on } X = \{x_1, x_2, x_3\} \text{ and}$$

$$Y = \{y_1, y_2\} \text{ respectively then Determine } A' \text{ by using Generalized Modus Tollens rule}$$

UNIT-III

5. Obtain a fuzzy set from the following data points $\{(0,0), (0.4,0.6), (0.6,0.8), (1,1)\}$ using Lagrange's interpolation method. 14M

(OR)

6. Construct a fuzzy set from the given data points 14M
 $\{(0,0), (0.5,0.3), (0.8,0.7), (1,1), (1.2,0.6), (1.5,0.8), (2,0.5)\}$
 using Least squares curve fitting method

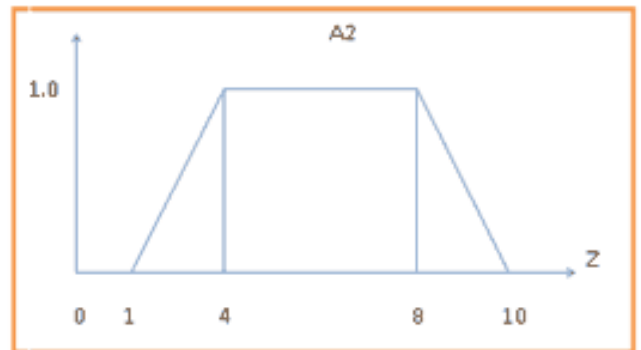
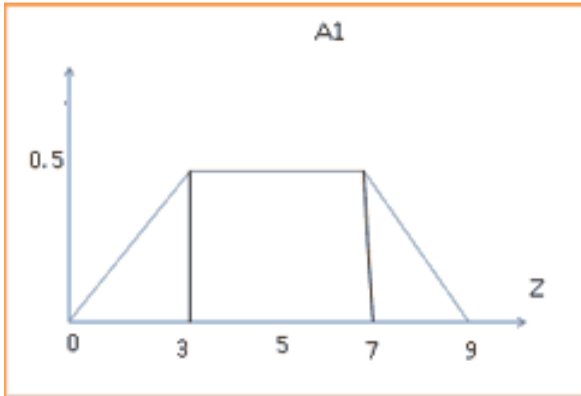
UNIT-IV

7. Explain the fuzzy control system with their block diagram. Give one example. 14M
- (OR)
8. Design a fuzzy controller for a train of a station whose inputs are distance from a station D of range 0-100Km, speed of a train, S of range 0-80Km/hr. The output is break power, P used to control the train. Find the break power P when the train is at a distance D = 50Km and Speed of the train S = 60Km/hr. 14M

UNIT-V

9. Fuzzy set A_1 & A_2 are given by

14M

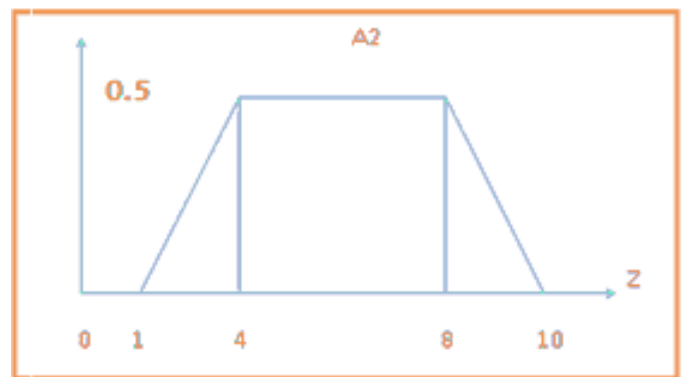
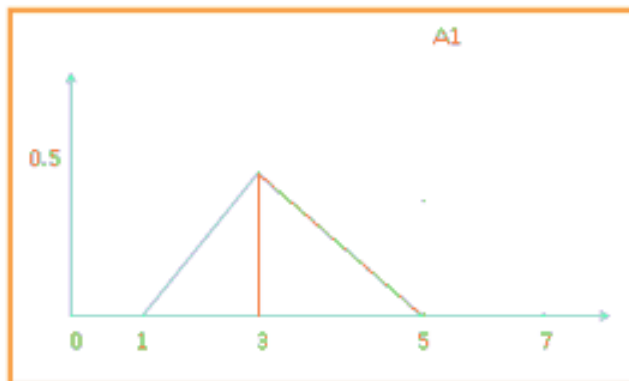


Calculate the de fuzzified value z^* using 1. Centroid Method 2. Centre of Sums method 3. Mean of Maxima method for $(A_1 \cup A_2)$.

OR

10. Fuzzy set A_1 & A_2 are given by

14M



Calculate the defuzzified value z^* using 1. Centroid Method 2. Center of Sums method 3. Mean of Maxima method $(A_1 \cup A_2)$.

Answer ONE Question from each Unit

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UNIT-I

1. a) Define EIS, identify the main factors will affect the EIA during impact evaluation and analysis. 8 M
- b) Outline the major environmental parameters to be considered for evaluation in case of thermal power plants. 6 M

(OR)

2. a) Compare the differences between Rapid EIA and Comprehensive EIA. 7 M
- b) Examine the key aspects associated with the Initial Environmental Examination. 7 M

UNIT-II

3. a) Define economic externality and discuss how B/CR method is helpful in preparing EIA report. 7 M
- b) Explain about API (Air Pollution Index) to establish air quality of an industrial area. 7 M

(OR)

4. a) Demonstrate the advantages and disadvantages with the Ad-hoc method. 5 M
- b) Evaluate the Leopold interaction matrix method with an example. 9 M

UNIT-III

5. a) Analyze the threat facing by wildlife through various Land Clearing Activities. 6 M
- b) Assess a range of environmental problems to be occurring by deforestation. 8 M

(OR)

6. a) List out various environmental problems encountering by the recent expansion of National Highway-16. 7 M
- b) Elaborate the major parameters to be considered to evaluate vegetation for impact assessment by an LCA. 7 M

UNIT-IV

7. a) Discover in detail about on-site environmental audit activities. 8 M
- b) Prioritize the key points during preparation of an environmental audit report for a premier educational institute. 6 M

(OR)

8. a) Recall the main goals and general types of environmental audit. 7 M
- b) Examine the general parameters considered for evaluation and preparation of audit report at a thermal power plant. 7 M

UNIT-V

9. a) Summarize the functions of State Pollution Control Boards under Water (Prevention and Control of Pollution) Act-1974. 8 M
- b) Develop an EIA report for a medium coal mining project. 6 M

(OR)

10. a) Explain the significance of provisions provided under law and discuss the major provisions of Wildlife (Protection) Act-1972. 8 M
- b) Develop an EIA report for a quarry activity by considering Tekkali granite quarry as a case study. 6 M

ENERGY AUDIT CONSERVATION AND MANAGEMENT**Time: 3 Hours****Max Marks: 70**

Answer ONE Question from each Unit

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UNIT-I

1. a) Define Energy Audit, Energy Index, Cost Index And Load Profiles. 8M
b) Explain the representation of energy consumption. 6 M
(OR)
2. Identify various energy conservation schemes. 14 M

UNIT-II

3. Describe organization of energy management program. 14 M
(OR)
4. a) Discuss Principles for Effective Energy Management. 10 M
b) Explain Planning, Promoting. 4 M

UNIT-III

5. Find different loss in electrical motors. 14 M
(OR)
6. a) Explain different factors affecting energy efficient motors. 6 M
b) Identify the characteristics of a electrical motor depends on variable speed and variable duty cycle. 8 M

UNIT-IV

7. a) Define Power factor, classify the methods of improvement.. 8 M
b) Explain about Energy Instruments. 6 M
(OR)
8. Outline about Good lighting system design and practice. 14 M

UNIT-V

9. Explain different Depreciation Methods. 14 M
(OR)
10. a) Illustrate the life cycle costing analysis. 7 M
b) What is replacement analysis? 7 M

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

III B.Tech I Semester Regular & Supplementary Examinations, October / November- 2019

**ELEMENTS OF WORKSHOP TECHNOLOGY
(Except ME Branch)**

Time: 3 Hours**Max Marks: 70M**

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) Define and classify manufacturing processes. 7M
b) Explain green sand casting with neat sketch. 7M

(OR)

2. List out metal removal processes and explain any four metal removal processes with neat Sketches. 14M

UNIT-II

3. List out and explain marking and measuring tools in carpentry. 14M

(OR)

4. a) Explain different boring tools in carpentry. 7M
b) Explain different striking tools in carpentry. 7M

UNIT-III

5. a) Define and classify files. 7M
b) Explain different types of files with neat sketches. 7M

(OR)

6. Explain striking and holding devices in fitting. 14M

UNIT-IV

7. Explain the following hand tools in forging with neat sketches. 14M
i)Anvil ii) Swage block and iii) tongs

(OR)

8. List out different forging operations and explain any three forging operations. 14M

UNIT-V

9. (a) List out sheet metal hand tools. 5M
(b)Explain snips and hand hammers. 9M

(OR)

10. Explain the following sheet metal joints 14M
i) Hem joint and ii) Seam joint

AR16

CODE: 16OE3035

SET-1

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

III B.Tech I Semester Regular & Supplementary Examinations, October / November- 2019

INTRODUCTION TO SIGNAL PROCESSING

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 causality and stability of a linear time invariant system 6M
b) For the following discrete time signals, determine whether or not the system is linear, shift invariant, causal and stable. 8M
(i) $y(n)=x(n-1)+x(n+7)$ (ii) $y(n)= nx^2(n)$
(OR)
2. a) Explain about classification of system. 8M
b) Find the z transform of the following signals. 6M
i) $u(n)$ ii) $(a)^n u(n)$

UNIT-II

3. a) Define DFT and explain about the properties of DFT. 4M
b) Determine the 8-point DFT of the sequence $x(n) = \{1,1,1,1,1,1,0,0\}$. 10M
(OR)
4. a) Find IDFT of the sequence $X(k) = \{5,0,1-j,0,1,0,1+j,0\}$ 7M
b) Determine the output $y(n)$ if $h(n)=\{1,2,1,1\}$; $x(n)=\{1,-1,1,-1\}$ by using Linear Convolution. 7M

UNIT-III

5. a) Find the DFT of the sequence $x[n]=\{1,2,1,2,1,2,1,2\}$ using DIT – FFT algorithm. 10M
b) Develop a radix-2 DIF FFT algorithm for evaluating the DFT for $N=8$. 4M
(OR)
6. a) Compare DIT and DIF FFT algorithms 4M
b) Find the IDFT of the sequence $X(k)=\{4,1-j2.414,0,1-j0.414,0,1+j0.414,0,1+j2.414\}$ using DIF algorithm. 10M

UNIT-IV

7. a) Write the steps to design an analog Chebyshev lowpass filter. 6M
b) Design a Butterworth Low pass filter to meet the following specifications $\alpha_p= 2\text{dB}$, $f_p=20\text{rad / sec}$ $\alpha_s=10\text{dB}$, $f_s= 30\text{rad / sec}$ 8M
(OR)
8. a) Given the specifications $\alpha_p= 3\text{dB}$, $\alpha_s=16\text{dB}$, $f_p=1\text{kHz}$, $f_s=2\text{kHz}$. Determine the order of the filter using Chebyshev approximation. Find $H(s)$. 7M
b) Apply bilinear transformation to $H(s) = 2/(S+1)(S+2)$ with $T=1$ sec and find $H(z)$. 7M

UNIT-V

9. a) Compare FIR and IIR filters. 4M
b) Design a high pass FIR filter into for the following specifications. Cut of frequency = 250Hz, sampling frequency $=5\pi / 2$, filter length = 11 using rectangular window. 10M
(OR)
10. a) What is a Hamming window function? 2M
b) Design a high pass FIR filter into for the following specifications. Cut of frequency = 250Hz, sampling frequency =1kHz, filter length = 7 using hanning window. 12M

AR16

CODE: 16OE3036

SET-2

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

III B.Tech I Semester Regular & Supplementary Examinations, October / November- 2019

SOCIAL NETWORKS

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) How Social Network involved in day to day life? 7M
b) What are the Attributes of Social Web? 7M
(OR)
2. Give various stages involved in Development of Semantic Web? And also specify limitations of current web. 14M

UNIT-II

3. a) Note key concepts of Network Analysis? 7M
b) Discuss development of Social Network Analysis? 7M
(OR)
4. a) Write a notes on concepts of Network Analysis, Measure in Networks ? 7M
b) Explain the following 7M
i)C/P Structure (4M) ii)group (3M)

UNIT-III

5. a) Discuss Electronic Discussion of Network Analysis? 7M
b) Explain Blogs and Online Communities? 7M
(OR)
6. a) Explain Blogs and Social Network features 7M
b) Explain Electronic sources for Network Analysis. 7M

UNIT-IV

7. The ontology of services provides three essential types of knowledge about a service. Explain them in detail. 14M
(OR)
8. a) Explain how namespaces mechanism of XML is used in RDF 7M
b) Explain the features of Ontology 7M

UNIT-V

9. a) Discuss storage and reasoning of social networks? 7M
b) Compare visualization and analysis of social network analysis? 7M
(OR)
10. What are the various techniques for data acquisition? 14M

AR16

CODE: 16OE3037

SET-1

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

III B.Tech I Semester Regular & Supplementary Examinations, October / November- 2019

FUNDAMENTALS OF COMPUTER GRAPHICS

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 about the components and working of CRT with a neat diagram. 7M
b) Discuss any six application areas of Interactive computer graphics. 7M
- (OR)
2. a) List the different input Devices of Graphic System and explain each device. 7M
b) Explain Two basic techniques for producing color displays with a CRT. 7M

UNIT-II

3. a) List out any five Difference between DDA and Bresenhams Line Drawing Algorithms. 7M
b) Explain Boundary-Fill and Flood-Fill Algorithms. 7M
- (OR)
4. a) Explain Bresenhams Line Generation Algorithm and Digitize the line with end points (20,10) and (30,18) using Bresenhams Line Drawing Algorithm. 7M
b) Demonstrate Scan-Line polygon fill Algorithm with different cases. 7M

UNIT-III

5. a) Define Composite Transformation and derive composite transformation matrix for Translation, Rotation and scaling. 7M
b) Rotate a polygon A(0,0), B(0,2), C(1,3), D(2,2) and E(2,0) by 90 degrees about origin in anticlock wise direction and clock wise direction. 7M
- (OR)
6. a) Explain 2D transformations- Translation, Rotation ,Scaling , Reflection and Shear 7M
b) Show that the composition of two rotation is additive by concatenating the matrix representations for $R(\alpha_1) R(\alpha_2) = R(\alpha_1 + \alpha_2)$ 7M

UNIT-IV

7. a) Write short note on Bezier Curves. 7M
b) Write short note on B-spline Curves. 7M
- (OR)
8. a) Identify the basic 3D Transformations and explain each with neat diagrams. 7M
b) Explain Cohen-Sutherland Line Clipping Algorithm. 7M

UNIT-V

9. a) Write about Back-Face Detection method. 7M
b) Explain the design of animation sequence. 7M
- (OR)
10. a) Explain Scan-line algorithm. 7M
b) What is meant by Z-buffer? 7M

AR13

CODE: 13EC3017

SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech I Semester Supplementary Examinations, October / November- 2019

PULSE AND DIGITAL CIRCUITS
(Electrical and Electronics Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) What is an attenuator?
b) State the lower 3-db frequency of high-pass circuit?
c) Define Series clipper and shunt clipper
d) Draw the circuit diagram of Slicer
e) Define Storage time of a diode
f) Give some applications of Unidirectional Sampling gates
g) Explain the role of Commutating Capacitors?
h) Compare the voltage and current time base generator?
i) Define the term Recovery Time for Astable Multivibrator?
j) Define Settling time, transition time in a Bistable Multivibrator

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

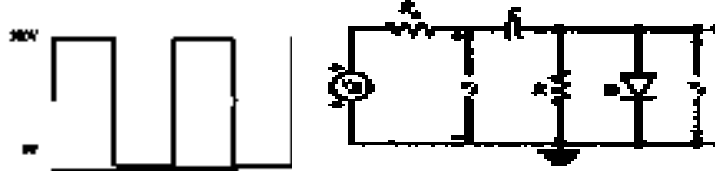
2. a) An ideal 1microsec pulse is fed to an amplifier. Calculate and plot the output waveform under the following conditions: the upper 3-dB frequency is 0.1MHZ 6M
b) Explain the response of RC low pass circuit for exponential input signal 6M
(OR)
3. a) Describe the relationship between rise time and RC time constant of a low pass RC circuit. 6M
b) Draw the different output waveforms of a RC Low Pass circuit when it is applied with Different inputs like (i) Step-voltage input (ii) pulse input iii) Square input 6M

UNIT-II

4. a) Explain the response of the clamping circuit when a square wave input is applied under steady state conditions. 6M
b) A pulse of 5 V amplitude and pulse width of 0.5 msec is applied to a high pass RC circuit consisting of R=22 K ohms and C= 0.47 micro F. Sketch the output waveform and determine the percentage tilt in the output. 6M

(OR)

5. a) Draw the basic circuit diagram of positive peak clamper circuit and explain its operation. 6M
- b) For the input voltage $V_i = 100V$. Calculate and plot the Steady state output voltage ($T_1 = 100\mu\text{sec}$, $T_2 = 1000\mu\text{sec}$, $C = 0.1\mu\text{F}$, $R = 100K\Omega$, $R_s = 100\Omega$, $R_f = 100\Omega$) 6M



UNIT-III

6. a) Describe the switching times of BJT by considering charge distribution across the base region. Explain this for cut-off, active and saturation region.. 6M
- b) Explain the temperature sensitivity parameters of a transistor 6M
- (OR)
7. a) Explain the storage and transition times of the diode as a switch. 6M
- b) Explain the operation of bistable multi-vibrator circuit with circuit diagram and waveform 6M

UNIT-IV

8. a) Draw the various wave shapes of the astable multi vibrator. 6M
- b) Design a Schmitt trigger circuit using NPN transistors having $h_{fe}(\text{MIN}) = 60$. $V_{be \text{ cut-off}} = 0V$, $V_{ce}(\text{Sat}) = 0.2V$ and $V_{be}(\text{Sat}) = 0.7V$. Given $V_{cc} = 8V$ and o/p swing = 6V, $UTP = 3.5V$, $LTP = 1.5V$, $R_1 = 10K$ AND $R_2 = 2K$. Determine R_{c1} , R_{c2} and R_e 6M
- (OR)
9. a) Explain how to draw the various waveforms and calculate their voltage levels in an emitter-coupled monostable multi vibrator 6M
- b) Explain the operation of Astable multivibrator. 6M

UNIT-V

10. a) Explain the basic principles of Miller and Bootstrap time base generators 6M
- b) Define sweep speed error, transmission error and displacement error pertaining to sweep circuits. Also derive the expressions for the same with respect to an exponential sweep circuit. How are linearly varying current waveforms generated? 6M
- (OR)
11. a) Explain Transistor miller time base generator. 6M
- b) Explain about Sampling gates. 6M

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

1. a) What is superscalar execution?
- b) What is bus in a computer system?
- c) Perform the arithmetic operation $(-35) + (-45)$ with binary numbers and negative number in signed-2's complement representation.
- d) What is register transfer language?
- e) Describe arithmetic shift operation.
- f) Mention various processor organizations.
- g) Briefly explain the role of input-output interface in a computer system.
- h) What is meant by asynchronous data transfer?
- i) Define critical section.
- j) What is pipelining?

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

2. a. List and explain the role of each of the functional units of a computer system. 8 M
- b. List the steps needed to execute the following machine instruction in terms of transfers between the functional units and some simple control commands. 4 M

ADD R1,R2,R3**(OR)**

3. a. How to assess the performance of a computer? Explain. 4 M
- b. Explain how memory and processor can be connected in a computer. Also provide some essential operational details of the processor. 8 M

UNIT-II

4. Discuss the addition and subtraction algorithms for signed magnitude data. Draw and explain the flowcharts. 12 M

(OR)

5. a. Describe restoring method used for the division of two numbers. 6 M
- b. Write short notes on floating-point arithmetic operations. 6 M

UNIT-III

6. a. Discuss in detail about different logic microoperations. 6 M
- b. Explain how to construct a bus system for four registers. Draw and describe the block diagram of constructed bus system. 6 M

(OR)

7. With suitable examples, explain various addressing modes. 12 M

UNIT-IV

8. Explain in detail about different modes of data transfer. 12 M

(OR)

9. a. Write brief notes on main memory. 6 M
- b. What is virtual memory? Write in detail about the concept of virtual memory. 6 M

UNIT-V

10. a. With the aid of relevant examples explain pipeline processing. 4 M
- b. Explain in detail about instruction pipeline. 8 M

(OR)

11. a. What is cache coherence problem? Suggest solution to it in shared memory multiprocessors. 7 M
- b. Briefly describe the dynamic arbitration algorithms. 5 M