

M.SC.(COMPUTER SCIENCE) PART -II**Artificial Intelligence
& Image Processing****(DEC - 2017)****Q.P.Code: 08951**

(2½ Hours)

[Total Marks: 75]

N.B:

1. Attempt any three questions from each section
2. Answers to the two sections must be written in same answer sheet.
3. Figures to the right indicate full marks.
4. Assume additional data if necessary but state the same clearly.
5. Symbols have their usual meanings and tables have their usual standard design unless stated otherwise.
6. Use of Simple calculators and statistical tables is allowed.

Section I

1	A	Explain briefly neural network and its importance in AI	6
	B	What are Atoms and Lists in Lisp?	6
2	A	Explain Knowledge Discovery Process.	6
	B	Explain Isa-Hierarchy.	6
3	A	What is fuzzy logic? Explain with example.	6
	B	What are applications of Genetic Algorithm?	6
4	A	I read a book (b) He likes novels (c) She reads fictions - convert into predicates.	6
	B	Explain Pulse -Coded Signal functions.	6
5	A	What is AI? Explain the components of AI with suitable block diagram	6
	B	Explain two-armed and K-armed Bandit Problem.	6

Section II

6	A	What are the Components of Image Processing?	6
	B	Short note on (a)DFT. (b) Walsh transform.	7
7	A	Explain Spatial Filtering in detail.	6
	B	What do you mean by frequency domain filter? Explain Homomorphic filtering.	7
8	A	What do you mean by Morphological Image Processing? Explain Hit-or-Miss transformation.	6
	B	Explain (a) Subband coding. (b) Haar transform	7
9	A	Differentiate between Error free compression and Lossy compression.	6
	B	Explain Edge linking and Boundary detection.	7
10	A	Write short note on Image Sampling and Quantization.	6
	B	What is Boundary descriptors, Regional descriptors?	7

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Section I

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|---|---|---|---|
| 1 | A | Compare centralized and decentralized architecture in a distributed system? | 6 |
| | B | Describe the different forms of communication in distributed system. | 6 |
| 2 | A | Discuss the primitives of a socket used in socket programming in connection oriented protocol. | 6 |
| | B | Discuss flat and structured naming systems with the help of examples. | 6 |
| 3 | A | What is mutual exclusion? Discuss the advantage and disadvantage of using token ring algorithm for mutual exclusion. | 6 |
| | B | What is cache coherence? Discuss the implementation issues of cache coherence protocol in the Client centric consistency model. | 6 |
| 4 | A | What is main issue in backward recovery? How it is achieved? What is forward recovery? | 6 |
| | B | Discuss the different types of system authentication protocols. | 6 |
| 5 | A | Discuss client side caching in CODA. | 6 |
| | B | Illustrate with an example the implementation of an object reference that allows a client to bind to a remote object in CORBA. | 6 |

Section II

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|---|---|---|---|
| 6 | A | Differentiate between Interrupts and polling. Also explain what is edge triggering and level triggering interrupt modules. | 6 |
| | B | Write a short note VLSI and PLD. | 7 |
| 7 | A | Explain the different deadlock prevention methods. | 6 |
| | B | Explain unipolar and bipolar stepper motor. | 7 |
| 8 | A | Consider the following C code. Write an appropriate assembly code for it
while (x != 1000)
{
...
} | 6 |
| | B | What is clock cycle? Given a clock frequency of 10 MHz, determine the number of clock cycles corresponding to a real-time interval of 100 ms. | 7 |

TURN OVER

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|----|---|---|---|
| 9 | A | Explain in detail Blind counting synchronization and Gadget Busy waiting. | 6 |
| | B | Explain with example data sharing problem with respect to interrupts. | 7 |
| 10 | A | Write a C code to initialize and activate External interrupt 1 to rising edge, when input is given to external interrupt pin. | 6 |
| | B | What is preemptive and non preemptive interrupts? Explain with example. | 7 |

M.SC.(COMPUTER SCIENCE) PART -II**Elective I****Enterprise Networking and Satellite Communication****(DEC - 2017)****Q.P.Code: 10467****(3 Hours)****[Marks: 75]**

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Section I

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|---|---|--|---|
| 1 | A | What is modulation? Explain Phase Shift modulation with a neat diagram. | 6 |
| | B | Explain Next-Hop forwarding with a neat diagram. | 6 |
| 2 | A | State the disadvantages of Asynchronous Transfer Mode (ATM) technology. Explain any three. | 6 |
| | B | What are Virtual Private Networks (VPNs)? Explain how VPNs are built and how they work. | 6 |
| 3 | A | Explain Routing in a WAN with a neat diagram. | 6 |
| | B | Explain Ring Topology and Token Passing. | 6 |
| 4 | A | Describe the concept of Byte Stuffing with an example. | 6 |
| | B | What is Transmission Media? State different types of transmission media and briefly explain any two. | 6 |
| 5 | A | How is Bridging implemented across longer distances? Explain its working with a neat diagram. | 6 |
| | B | State the different types of Digital Subscriber Line (DSL) technology. Explain any two. | 6 |

Section II

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|---|---|---|---|
| 6 | A | State Kepler's Laws of Satellite motion. Explain any one. | 6 |
| | B | What are Double Reflector Antennas? Explain the two types of double reflector antennas. | 7 |
| 7 | A | Explain Hohmann's Transfer orbit. | 6 |
| | B | State the different Transmission Losses. Briefly explain any three. | 7 |

TURN OVER

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|----|---|---|---|
| 8 | A | State and briefly explain the different types of High Power amplifiers. | 6 |
| | B | What are the causes of Depolarisation? Explain any two. | 7 |
| 9 | A | Explain Telemetry, Tracking and Command Subsystem (TTC). | 6 |
| | B | Explain parabolic reflectors. | 7 |
| 10 | A | What are Orbital Perturbations? Explain its causes. | 6 |
| | B | What are the design considerations for a communication satellite? | 7 |
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M.SC.(COMPUTER SCIENCE) PART -II**Elective II****Optimization Techniques and
Customer Resources Management****(DEC - 2017)****Q.P.Code: 10477****[3 Hours]****[75 Marks]**

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Section I

- 1 A A company manufactures 2 products A & B. Product A yields a contribution of Rs 30/- per unit and product B Rs 40/- per unit towards the fixed cost. It is estimated that sales of product A for the coming month will not exceed 20. Sales of product B have not been estimated but the company does have a contract to supply at least 10 units to a regular customer. Machines hours available for the coming month are 100 hours and product A & B takes 4 hours and 2 hours respectively. Labour hours available are 180 and product A & B takes 4 hours and 6 hours respectively. Materials available are restricted to 40 units and 2 products each use 1 unit of material per unit. Formulate this LPP. 6
- B What are the advantages of optimization techniques 6
- 2 A In linear programming explain the following terms: 6
1. Slack variable
 2. Surplus Variable
 3. Artificial Variable
- B Solve the following using simplex method 6
- Maximize $Z=5x_1+3x_2+7x_3$
 Subject to constraints:
 $x_1+x_2+2x_3 \leq 22$
 $3x_1+2x_2+x_3 \leq 26$
 $x_1+x_2+x_3 \leq 18$
 $x_1, x_2, x_3 \geq 0$
- 3 A Write an algorithm to explain LCM method 6
- B Solve the following transportation problem for getting optimal solution 6

	P	Q	R	S	Avail
A	20	21	16	18	10
B	17	28	14	16	09
C	29	23	19	20	7
Demand	6	10	4	5	

TURN OVER

- 4 A Explain multiple optimal solutions in assignment problems. 6
 B Maximize the profit for the given assignment problem? 6

	1	2	3	4	5
A	32	38	40	28	40
B	40	24	28	21	36
C	41	27	33	30	37
D	22	38	41	36	36
E	29	33	40	35	39

- 5 A Explain Travelling Salesman problem. 6
 B Write a short note on Sensitivity analysis? 6

Section II

- 6 A Define customer. Explain Customer life cycle. 6
 B Cost of retaining old customer is always less than generating new customer. 7
 Justify the statement with proper example
- 7 A Explain CRM technology components in detail. 6
 B Give the difference between CRM and E-CRM 7
- 8 A Discuss the barriers to successful SFA. 6
 B Explain the five step process involved in Permission Marketing. 7
- 9 A State and explain various background processes involved in call Centre 6
 implementation
- B Explain Automatic Call Distribution (ACD). 7
- 10 A Explain the role of Data Warehousing in CRM. 6
 B Who are ASP's? Explain their role in implementing CRM 7
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