**M.SC. (COMPUTER SCIENCE) (PART-II)**
**Artificial Intelligence and Image Processing**
***(DEC - 2018)***

**...nce : Paper I - Artificial Intelligence and Image Processing.**

**Q. P. Code: 21514**

**[Time: 3 hrs]** **[Marks: 75 Marks]**

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 | What Quantifiers are available in predicate calculus to representing knowledge? Distinguish between them with suitable example? | 6 |
| | B | Write short note on:<br>i) Frames<br>ii) Conceptual dependency | 6 |
| 2 | A | Write a Lisp function to find largest of 3 numbers. | 6 |
| | B | Explain the output of the following:<br>i) (member 'b '(a b (c d)))<br>ii) (car (cdr (car (cdr '((a b) (c d) e)))))<br>iii) (setq x (+ 2 3 5)) | 6 |
| 3 | A | Describe components of classifier system in detail? | 6 |
| | B | What is crossover? Explain how it is been carried out with an example. | 6 |
| 4 | A | Describe briefly De Jong function of optimization. | 6 |
| | B | Describe classifier system as a genetic based machine learning system. | 6 |
| 5 | A | Describe KDD process in details. | 6 |
| | B | Explain the K Nearest Algorithm and its usage in AI. | 6 |

**Section II**

| | | | |
|---|---|---|---|
| 6 | A | List and Explain basic steps of Image Processing? | 6 |
| | B | Draw and explain structure of Human Eye. | 7 |
| 7 | A | Write a short note on Brightness Adaption and Discrimination. | 6 |
| | B | How Image is stored, processed and Displayed in Computer System. | 7 |
| 8 | A | Explain any two gray level transformation with proper example. | 6 |
| | B | What is a relation between Digital Image and Histogram? | 7 |
| 9 | A | Explain terms (i) Error free compression (ii) Lossy Compression | 6 |
| | B | Explain Hit-or-miss transformation with example also what are the application of same? | 7 |
| 10 | A | With which technique detection of edge are identified. | 6 |
| | B | Write a short note on region based Segmentation. | 7 |

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# M.SC. (COMPUTER SCIENCE) (PART-II)

## Distributed Computing & Embedded System

## (DEC - 2018)

**Q. P. Code: 39810**

Marks: 75

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.
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6. Use of Simple calculators and statistical tables is allowed.

### Section-I

| | | | |
|---|---|---|---|
| 1 | A | Compare and contrast simple and multi-layer architecture of client-server. | **6** |
| | B | Explain with diagram six types of communications seen in message-oriented communication system. | **6** |
| 2 | A | List and explain 3 ways to organize the servers. | **6** |
| | B | Write a short note on Namespace and Name Resolution. | **6** |
| 3 | A | Explain Lamport Timestamps. | **6** |
| | B | State and discuss various Election Algorithms | **6** |
| 4 | A | Differentiate between strict consistency and sequential consistency. | **6** |
| | B | Write a short note on Process Resilience. | **6** |
| 5 | A | What is Recovery? Explain with its types. | **6** |
| | B | Explain key Management with principle of Diffie-Hellman Key Exchange. | **6** |

### Section-II

| | | | |
|---|---|---|---|
| 6 | A | Write a short note on classification of Embedded System. | **6** |
| | B | What is mean by IC ? Write a short note on Design Technology of IC with suitable diagram. | **7** |
| 7 | A | Explain Inter-Process Communication used in Embedded System. | **6** |
| | B | What are real time methods explain them in details. | **7** |
| 8 | A | Explain steps to use a function in an Embedded program with an Example | **6** |
| | B | What is an event ? What are various features of that event? How events are processed by Micro Controller. | **7** |
| 9 | A | Explain Interrupt Handling and Time Management performed by RTOS. | **6** |
| | B | Elaborate the use of multi-core processor for Embedded Systems. | **7** |
| 10 | A | Explain Watchdog timer and its uses. | **6** |
| | B | Explain internal architecture of typical memory chip. | **7** |

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**M.SC. (COMPUTER SCIENCE) (PART-II)**
**Enterprise Networking & Satellite Communication**
***(DEC - 2018)***

**Q.P.Code: 10468**

**(3 Hours)** **[Marks: 75]**

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.
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6. Use of Simple calculators and statistical tables is allowed.

## Section I

| | | | |
|---|---|---|---|
| 1 | A | Briefly explain any three techniques that protocols use to circumvent or solve communication problems. | 6 |
| | B | How is 'Frame Filtering' implemented in bridges? What are Adaptive or Learning bridges? Explain the concept of Adaptive bridges with a neat diagram. | 6 |
| 2 | A | Write a short note on Network Analysers. | 6 |
| | B | Explain the Ping and Traceroute tools | 6 |
| 3 | A | Explain CSMA and 'Collision Detection and Backoff' with CSMA/CD | 6 |
| | B | Explain Multicasting and Broadcasting. How do they differ from each other? | 6 |
| 4 | A | What is Distributed Route computation? Explain any one algorithm for Distributed Route computation. | 6 |
| | B | State and Explain the categories into which various physical address forms are grouped. | 6 |
| 5 | A | How do transmission errors occur? Explain any two transmission error detection mechanisms | 6 |
| | B | What is Connection-Oriented Service Paradigm? Briefly explain any three examples of the above. | 6 |

## Section II

| | | | |
|---|---|---|---|
| 6 | A | State and explain Kepler's third law of orbital motion of a satellite. | 6 |
| | B | Explain Antenna Look Angles for geostationary satellite. | 7 |

**TURN OVER**

**Q.P.Code: 10468**



| | | | |
|---|---|---|---|
| 7 | A | Explain the different types of Horn Antenna with neat diagrams. | 6 |
| | B | What are the design considerations for non-geostationary communication satellites? | 7 |
| 8 | A | Briefly explain the radiation patterns of different antennas with neat diagrams. | 6 |
| | B | State the implementations of Very Small Aperture Terminals VSATs. Explain its configuration, advantages and disadvantages. | 7 |
| 9 | A | What are Antenna Mounts? Explain most common types of antenna mounts. | 6 |
| | B | Explain Ionospheric and Rain Depolarisation | 7 |
| 10 | A | What is Rain rate? Explain Rain Attenuation. | 6 |
| | B | Explain the subsystem components of the payload platform (BUS) | 7 |

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**M.SC. (COMPUTER SCIENCE) (PART-II)**
**Optimization Techniques & Customer Relations Management**
***(DEC - 2018)***

**Q. P. Code: 39583**

n: 3 hours [75 Marks]

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.
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**Section I**

1 A Solve the following LPP to maximize the profit using graphical Method: 6

Maximize Z= 20x+ 30y

Subject to constraints:

$3x+3y \leq 36$

$5x+2y \leq 50$

$2x+6y \leq 60$

With non-negative restrictions $x, y \geq 0$.

(X and Y are the number of chairs and table produced per day)

B Explain the scope of Optimization Techniques. 6

2 A Elaborate the relationship between dual and primal. 6

B Solve the following using simplex method 6

Minimize $Z=20x_1+30x_2+16x_3$

Subject to constraints:

$2.5x_1+3x_2+x_3 \geq 3$

$x_1+3x_2+2x_3 \geq 4$

$x_1, x_2, x_3 \geq 0$

3 A Elaborate steps to construct LCM. 6

B Solve the following transportation problem for getting optimal solution using VAM method 6

| | P | Q | R | S | Avail |
|---|---|---|---|---|---|
| A | 90 | 90 | 100 | 100 | 200 |
| B | 50 | 70 | 130 | 85 | 100 |
| Demand | 75 | 100 | 100 | 30 | |

4 A Write a short note on the following with respect to Assignment Problems: 6

- Multiple Optimal Solution
- Prohibited assignments

**Q. P. Code: 39583**

| | | | |
|---|---|---|---|
| | B | Solve the following assignment problem where no assignments can be made of job 2 to machine A, job 3 machine B. | 6 |

| | S1 | S2 | S3 | S4 |
|---|---|---|---|---|
| A | 4 | 7 | 5 | 6 |
| B | - | 8 | 7 | 4 |
| C | 3 | - | 5 | 3 |
| D | 6 | 6 | 4 | 2 |

| | | | |
|---|---|---|---|
| 5 | A | Write an algorithm to explain Branch and bound method. | 6 |
| | B | Explain Transshipment problem with help of an example. | 6 |

**Section II**

| | | | |
|---|---|---|---|
| 6 | A | Along with the examples explain different types of Customer. | 6 |
| | B | Explain G-SPOT of CRM. | 7 |
| 7 | A | Explain in brief Front Office solutions and Enterprise Application Integration. | 6 |
| | B | Explain Customer Life Cycle in Detail. | 7 |
| 8 | A | State the features of E-CRM. ( ANY 6) | 6 |
| | B | What are the different barriers in successful SFA? | 7 |
| 9 | A | Explain the role of CRM in:<br>• Contact management<br>• Account management<br>• Opportunity management | 6 |
| | B | Elaborate on Customer Loyalty and retention program. | 7 |
| 10 | A | Explain the four phases of Typical midmarket CRM projects. | 6 |
| | B | Write a short note on C.T.I. (Customer Telephony Integration) | 7 |

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