

M.SC. (I.T.) (PART-I)
Computer Simulation and Modeling,
Programming with Components
(DEC - 2018)

[Time: Three Hours]

Q. P. Code: 38475

[Marks: 75]

Please check whether you have got the right question paper.

- N.B:**
1. All questions are compulsory.
 2. Answers to the two sections must be written in same answer book and should be submitted together.
 3. Write answers to same questions together.
 4. Mixing of sub-questions is not allowed.

Q.1 A) Explain continuous random variable with an example. 06

B) Write advantages and disadvantages of simulation. 07

OR

Q.1 A) Explain types of model in simulation. 06

B) Write a short note on application of simulation. 07

Q.2 A) Describe event scheduling simulation. 06

B) In a pharmacy firm, there are 5 workers who often come late. The owner has studied the 07

situation over a period of time and determined that there is 0.4 chance of any employee being late and that they arrive independently of one and another. Find the probability that,

- i. workers come late and
- ii. 4 workers come late

OR

Q.2A) Explain data collection for input modeling 06

B) A fair die is tossed 7 times. We say that a toss is success if a 5 or 6 appear; otherwise it's 07
 a failure. What is the distribution of the random variable X representing the number of successes out of the 7 tosses? What is the probability that there are exactly 3 successes? What is the probability that there are no successes?

Q.3A) What are characteristics of queuing system? 06

B) A random sample of 10 boys had the following IQ's 06
 70,120,110,101,88,83,95,98,107,100. Do these data support the assumption of a population mean IQ of 100? Find the reasonable range in which most of the mean IQ values of samples of 10 boys lie?

OR

Q.3A) What do you understand by model verification and validation? 06

B) The heights of 10 males of a given locality are found to be 70,67,62,68,61,68,70,64,64,66 06
 inches. Is it reasonable to believe that the average height is greater than 64 inches Test at 5%.

SECTION-II

- Q.4 A) Explain Multitier system architecture. 06
- B) Explain the features of Object Oriented Programming Language. 07

OR

- Q.4A) Why COM is better than C++? Justify your answer. 06
- B) What is COM Technology? What are their applications? 07

- Q.5A) What is CORBA? Explain. 06
- B) Write a short note on JNI. 06

OR

- Q.5A) Explain any five CORBA services in detail. 06
- B) Write a short note on [a] OMG [b] IDL 06

- Q.6A) Explain architecture of EJB. 06
- B) What do you meant by dynamic linking? Explain with suitable example. 06

OR

- Q.6A) Explain types of java beans in detail. 06
- B) Explain the steps of creation in JNI interface. 06

- N.B:** (1) All questions are **compulsory**.
(2) Answers to the **two sections** must be written in same answer book and should be submitted together.
(3) Write answers to **same questions** together.
(4) Mixing of **sub-questions** is **not allowed**.

SECTION – I

- Q.1** (A) What is a cellular system? Define spread spectrum. **6**
(B) Write a note on CDMA? Discuss CDMA v/s FTDMA. **7**
OR
Q.1 (A) Discuss near and far terminal problem. Discuss its solution. **6**
(B) Discuss the differences of GEO, MEO and LEO satellites. **7**
Q.2 (A) Write a note on “Terrestrial trunked radio”. Also mention its applications in real time. **6**
(B) Differentiate between AM and FM. Mention its applications. **7**
OR
Q.2 (A) Differentiate between Infrared and radio transmission. **6**
(B) Write a note on WATM. **7**
Q.3 (A) Explain GSM architecture with diagram. **6**
(B) Write a note on ALOHA. Explain what is Slotted ALOHA? **6**
OR
Q.3 (A) Explain why agent advertisement is needed in Mobile IP. What is agent solicitation? **6**
(B) What is WML ? Give one example of WML script. **6**

SECTION – II

- Q.4** (A) Explain Data communications. Compare it from past with present. **6**
(B) How is a bridge different from a switch and a router? What are routers? **7**
OR
Q.4 (A) Explain the frame format of synchronous transmission. **6**
(B) Write a note on xDSL. **7**
Q.5 (A) Write a note on “Traffic and congestion control”. **6**
(B) What is ISDN ? What is broadband ISDN? **6**
OR
Q.5 (A) State and explain any 2 transmission media in detail. **6**
(B) Write the functions of LLC and MAC sub-layers. **6**
Q.6 (A) What are routing protocols ? Why it is needed to have one. Prove your statement with one real time example. **6**
(B) Explain ATM in brief. **6**
OR
Q.6 (A) What is a system network architecture (SNA)? Write about its few functions. **6**
(B) Discuss the business and technical challenges faced by the organizations while setting up a network. **6**

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M.S.C. (I.T.) (PART-I)
Image Processing, Speech Recognition
(DEC - 2018)

Q. P. Code: 38478

(Hours)

[Total Marks: 75]

N. B..

- (1) All Questions are compulsory.
- (2) Answer to the two sections must be written in the same answer books and should be submitted together
- (3) Write answers to same question together

SECTION I

- Q1.** A Explain the components of general purpose image processing system with neat block diagram. **06**
- B Write short notes on Human Eye **07**

OR

- Q1.** A Explain “connectivity of pixels”. **06**
- B Write short note on Image formation model. **07**

- Q2.** A What is a digital Image? Explain the need for Image Processing. Differentiate between Image Enhancement and Image Restoration. **06**
- B Describe Brightness Adaption and Discrimination in detail. **07**

OR

- Q2.** A Explain i) contrast Stretching ii) Grey Level Slicing iii) Bit Plane Slicing **06**
- B Explain Erosion and Dilation of an image. **07**

- Q3.** A Suppose that a 3-bit image ($L=8$) of size 64×64 pixels ($MN = 4096$) has the intensity distribution shown in following table. Get the histogram equalization transformation function and give the $p_s(s_k)$ for each s_k **06**

Gray level r	0	1	2	3	4	5	6	7
Nk	790	1023	850	656	329	245	122	81

- B Explain the basic steps for filtering in the frequency domain. **06**

OR

- Q3.** A Define Segmentation. Explain point and edge detection. **06**
- B Explain Image Averaging and Image Subtraction. **06**

SECTION II

- Q4.** A Write short note on IIR and FIR filters. **06**
- B Explain with block diagram of a task-specific voice control and Dialog systems **07**

OR

- Q4.** A Explain coin toss model **06**
- B Explain the working of Human Ear **07**

- Q5.** A Explain characteristics of Speech Recognition Applications. **06**
- B What is Hidden markov model? Give its some application **06**

OR

- Q5.** A Write short note on urn and ball model. **06**
- B Write short note on Vector Quantization. **06**

- Q6.** A Explain bank-of-filters analysis model with block diagram **06**
- B Write advantage and disadvantage of source coding techniques. **06**

OR

- Q6.** A Write short notes on Directory listing retrieval. **06**
- B What are the adverse conditions in Speech recognition? How to deal with them? **06**

M.SC. (I.T.) (PART-I)
Data Warehousing and Mining
and Advanced Database Systems

(DEC - 2018)

(3 Hours)

Q. P. Code: 38481

[Total Marks: 75]

- N.B:** 1. All questions are compulsory.
 2. Write answer to the same question together.
 3. Answer to the two sections must be written in same answer book.

SECTION - I

Q.1

- A. What is Data Warehouse? Explain the need of data warehousing. [6]
 B. What is the difference between data processing and data mining? [7]

OR

- A. What is metadata? Explain the role of metadata in warehouse. [6]
 B. Explain the difference between star schema and snowflake schema. [7]

Q.2

- A. List out the various OLAP operations with example. [6]
 B. Explain the Knowledge Discovery in Database Process in detail. [7]

OR

- A. Explain in brief Association rules with example. [6]
 B. Write note on Slowly Changing Dimensions. [7]

Q.3

- A. Explain the life cycle of data ware house. [6]
 B. What are the methods of mining spatial databases? [6]

OR

- A. What is temporal mining? State its applications. [6]
 B. Explain the Architecture of data mining systems. [6]

SECTION - II

Q.4

- A. Explain the constraints on generalization and specialization. [6]
 B. Explain the Inheritance with respect to OODBMS. [7]

OR

- A. Explain Data Fragmentation and Replication. [6]
 B. Explain object identity, object state and abstract data types. [7]

Q.5

- A. Explain the Architecture for parallel databases. [6]
 B. Give comparison of RDBMS, OODBMS and ORDBMS [6]

OR

- A. List and explain problems with concurrency control and recovery in Distributed databases. [6]
 B. Short note on Temporal Databases. [6]

Q.6

- A. Write a short note on GIS. [6]
- B. Explain the structure of XML with example. [6]

OR

- A. Explain XML DTDs with example. [6]
- B. What is Deductive Databases? Explain difference between deductive databases and logic programming? [6]
