

MASTER OF COMPUTER APPLICATIONS (CBCS-2019 COURSE)

M.C.A. SEM - III : WINTER :- 2021

SUBJECT: PROBABILITY & GRAPH THEORY

Day : Thursday
Date 17-02-2022

W-22225-2021

Time : 10:00 AM-01:00 PM
Max. Marks: 60

N.B.:

- 1) Q 4 from Section I is COMPULSORY.
- 2) Answer ANY TWO questions from Q 1, 2, 3 in Section I.
- 3) Answer ANY TWO questions from Q 5, 6, 7 in Section II.
- 4) All questions CARRY EQUAL marks.
- 5) Answers to Both the sections should be written in SAME answer book.
- 6) Draw a labeled diagram WHEREVER necessary.

SECTION - I

Q.1) Answer the following: (6 Marks X 2 = 12)

- a) A uniform die is thrown at random. Find the probability that the number on it is:
i) 5 ii) Greater than 4 iii) Even
- b) Two dice are rolled at random. Obtain the probability of the sum of the numbers on them.

Q.2) Answer the following: (6 Marks X 2 = 12)

- a) Define Binomial distribution. What is the probability of guessing correctly at least six of the ten answer is a TRUE-FALSE objective test?
- b) Write a note on Sampling and its Limitation.

Q.3) Explain the following: (6 Marks X 2 = 12)

- a) The following mistakes per page were observed in a book
No. of mistakes per page: 0 1 2 3 4 Total
No. of Pages : 211 90 19 5 0 325
Fit a Poisson distribution and test the Goodness of fit.
- b) Write an algorithm of Preorder, Inorder, Post order

Q.4) Write short notes on the following: Attempt ANY THREE (4 Marks X 3 = 12)

- a) Addition Theorem
- b) Distribution function
- c) Binomial Distribution
- d) Sample Survey
- e) Fisher's transformation
- f) Rooted tree and their properties
- g) Warshall's algorithm

SECTION - II

Q.5) Answer the following: (6 Marks X 2 = 12)

- a) A random variable X has the following probability distributions
X: 4 5 6 8
P: 0.1 0.3 0.4 0.2
Find $E[X - E(X)]^2$
- b) What do you understand by theoretical distributions? Discuss their utilities in Statistics.

Q.6) Answer the following: (6 Marks X 2 = 12)

- a) What are the main objects of sampling? Compare and contrast the merits and drawbacks of sampling.
- b) Certain pesticide is packed into bags by a machine. A random sample of 10 bags is drawn and their contents are found to weigh(in kg) as follows:
50, 49, 52, 44, 45, 48, 46, 45, 49, 45
Test if the average packing can be taken to be 50 kg.

Q.7) Explain the following: (6 Marks X 2 = 12)

- a) Define Graph. Also discuss their types with examples
- b) Explain Sheep Cabbage Problem with solution
