

CDOE
MASTER OF COMPUTER APPLICATIONS (CBCS-2018 COURSE)
M.C.A. Sem - III : WINTER :- 2021
SUBJECT: PROBABILITY & GRAPH THEORY

Day : Thursday
Date 17-02-2022

W-19191-2021

Time : 10:00 AM-01:00 PM
Max. Marks: 70

N.B.

- 1) Attempt **ANY FOUR** questions from Section – I and **ANY TWO** questions from Section – II.
- 2) Figures to the **RIGHT** indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SAME** answer books.

SECTION – I

Q.1 The letters of the word 'article' are arranged at random. Find the probability that vowels will occupy the even place. **(10)**

Q.2 Find mean and variance from the following distribution. **(10)**

X_i	0	1	2	3	4	5
P_i	1/12	4/12	3/12	1/12	2/12	1/12

Q.3 The following table gives the number of days in 50-day period during which automobile accidents occurred in a city. **(10)**

No. of accidents	0	1	2	3	4
No. of days	21	18	7	3	1

Fit a Poisson distribution to the data.

Q.4 Describe briefly any three methods of sampling. **(10)**

Q.5 A die is rolled 100 times with the following distribution : **(10)**

Number :	1	2	3	4	5	6
Observed frequency:	17	14	20	17	17	15

At the 0.01 level of significance determine whether die is true (or uniform).

Q.6 Write short note on **ANY TWO** of the following. **(10)**

- i) Permutation & Combination with example
- ii) t-distribution
- iii) Sampling techniques and its uses

SECTION – II

Q.7 Describe Dijkstra's algorithm with example. **(15)**

Q.8 Describe Huffman Algorithm with example. **(15)**

Q.9 Define mathematical expectation of a random variable X . If $E(X)$ is the mathematical expectation of the variable X and C is a constant, show that $E(CX) = C E(X)$. **(15)**

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