Hall Ticket Number :										

R-15

Code: 5GC33

II B.Tech. I Semester Supplementary Examinations November 2023

Probability & Statistics

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

****

UNIT–I

1. a) Find the probability of getting a sum of 10 if we throw two dice 7M

   b) A random variable X has the following probability function

x	0	1	3	4	5	6	7
P(x)	0	K	2K	2K	3K	K^2	$7K^2+K$

   (i) Find the value of K ii) Evaluate p(0<X<5) iii) Evaluate p(X<6) 7M

OR

2. A card is drawn from a well shuffled pack of cards. What is the probability that it is either a spade or an ace? 14M

UNIT–II

3. A die is thrown 6 times. If getting an even number is a success, find the probabilities of (i) at least one success (ii) ≤ 3 successes (iii) 4 successes 14M

OR

4. In a binomial distribution consisting of 5 independent trails, probabilities of 1 and 2 success are 0.4096 and 0.2048 respectively. Find the parameter p of the distribution. 14M

UNIT–III

5. A normal population has a mean of 0.1 and standard deviation of 2.1. Find the probability that mean of a sample of size 900 will be negative 14M

OR

6. The variance of population is 2. The size of the sample collected from the population is 169. What is the standard error of mean 14M

UNIT–IV

7. a) If 80 patients are treated with an antibiotic 59 got cured. Find a 99% confidence limits to the true population of cure 7M

   b) A sample of 400 items is taken from a population whose standard deviation is 10. The mean of the sample is 40. Test whether the sample has come from a population with mean 38. Also calculate 95% confidence interval for the population 7M

OR

8. An ambulance service claims that it takes on the average less than 10 minutes to reach its destination in emergency calls. A sample of 36 calls has a mean of 11 minutes and the variance of 16 minutes. Test the significance at 0.05 level 14M

UNIT–V

9. A sample analysis of examination results of 500 students was made. It was found that 220 students had failed, 170 had secured a third class, 90 were placed in second class and 20 got a first class. Do these figures commensurate with the general examination result which is in the ratio of 4:3:2:1 for the various categories respectively 14M

OR

10. The number of automobile accidents per week in a certain community are as follows 12, 8, 20, 2, 14, 10, 15, 6, 9, and 4. Are these frequencies in agreement with the belief that accident conditions were the same during this 10 week period 14M

***

Hall Ticket Number :										

R-15

Code: 5G431

II B.Tech. I Semester Supplementary Examinations November 2023

Discrete Mathematics

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

****

Marks

UNIT–I

1. a) Prove that (P->Q)^(R->Q)<=>(PVR)->Q by using substitution method. 7M
   b) Explain automatic theorem proving with example. 7M

OR

2. a) Define statement and explain various connectives with example. 7M
   b) Define rules of inference. And Show that R→S can be derived from the premises P →(Q → S), ~R V P and R. 7M

UNIT–II

3. State relation and explain properties of binary relations with examples. 14M

OR

4. a) Explain types of functions with examples. 7M
   b) Draw the Hasse diagram for the positive divisors for 36. 7M

UNIT–III

5. a) Explain pigeonhole principle with example. 7M
   b) How many different license plates are there that involve 1, 2 or 3 letters followed by 4 digits? 7M

OR

6. a) How many committees of 5 or more can be chosen from 9 people? 6M
   b) Explain Binomial and multinomial theorems. 8M

UNIT–IV

7. a) How to solve Recurrence and Non Recurrence Relations. 7M
   b) Find the generating function for the following sequence.
      i) $1^2,2^2,3^2,\ldots\ldots$
      ii) $1^3,2^3,3^3,\ldots$ 7M

OR

8. Find a generating function for the recurrence relation $a_{n+1}-a_n=3^n$, n>=0, $a_0=1$. Find the general solution 14M

UNIT–V

9. a) Define Planner graph with examples. 5M
   b) What is Hamiltonian graph? Explain with an example. 9M

OR

10. a) What is spanning tree? Write and explain Breadth First Search algorithm with example. 9M
    b) What is Four-coloring problem? Explain with an example 5M

***

Important Note: 1. On completing your answers. Compulsorily draw diagonal cross line on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 32+8=40, will be treated as malpractice.