

QP CODE: 24800756



Reg No :

Name :

IMCA DEGREE EXAMINATION , FEBRUARY 2024

Second Semester

Faculty of Technology & Applied Science

Integrated MCA

CORE - IMCA2C02 - PROBABILITY AND STATISTICS

2020 Admission Onwards

3E532477

Time: 3 Hours

Maximum: 75 Marks

Part A

*Answer any **ten** questions*

*Each question carries **3** marks*

1. What is the classical definition of probability?
2. If a die is rolled three times what is the probability of 5 coming up at least once?
3. Define conditional probability.
4. Define Joint density function.
5. If $f(X)=0.2$ when $x=1$, $f(x)=0.3$ when $x=2$, $f(x) =0.5$ when $x=3$ Find $E(X)$.
6. What is the pdf of discrete uniform distribution? Give example.
7. In a town 10 accidents took place in a span of 100 days. Assuming that the number of accidents follows poisson, find the probability that there will be 3 or more accidents in a day.
8. What is mean by finite population. Explain.
9. What is mean by judgement sampling?
10. What is mean by critical region?
11. What is man by rejection region?
12. What is mean by test statistics?

(10×3=30 marks)





Part B

Answer **all** questions

Each question carries **9** marks

13. a) A University has to select an examiner from a list of 50 persons. 20 of them are women and 30 men. 10 of them know Hindi and 40 do not, 15 of them are teachers and remaining are not. What is the probability of the university selecting a Hindi knowing Woman teacher.

OR

- b) A man can hit a target 3 times in 5 shots B - 2 times in 5 shots , C- 3 times in 4 shots. they fire a volley. What is the probability that
1) exactly two shots hit? 2) Only one hits 3) All shots hit 4) none hits

14. a) A box contain 6 tickets. two of the tickets carry a prize of Rs 5 each and the other four prizes of Re 1 each. a) If one ticket is drawn, what is the expected value of the prize? b) if two tickets are drawn, what is the expected value of the prize?

OR

- b) A and B toss in turn an ordinary die for a prize of Rs 55. The first to toss a six win. If A has the first thrown what is his expectation?

15. a) Between the hours of 2 and 4 pm the average number of phone calls per minute coming into the switch board of a company is 2.5. Find the probability that during one particular minute there will be
(i) no phone calls at all. (ii) exactly 2 calls (iii) at least 5 calls

OR

- b) In a normal distribution 17 % of the items are below 30 and 17 % of the area above 60. Find the mean and SD.

16. a) Explain random sampling and non- random sampling.

OR

- b) Explain theory of estimation.

17. a) It is claimed that a random sample of 100 tyres with mean life of 15269 km is drawn from a population of tyres which has a mean life of 15200km and SD of 1248 km. Test the validity of the claim

OR





- b) For a sample of 100 labourers from Kerala, the average daily wages is Rs. 10.50 with SD Rs. 1.50. For a sample of 150 labourers from Tamil nadu the corresponding figures are Rs. 8.00 and Rs. 1.00 respectively. Can you conclude that the average wages of workers in Kerala are more than that of workwrs in Tamil Nadu?

(5×9=45 marks)

