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2603N1114

Candidate's Seat No :_____

I.M.B.A. in BI/IB/APR (Rep.) Sem.-2 Examination

FoS-I

Time : 2-30 Hours] **March-2025** **[Max. Marks : 70**

Instructions :(1) This paper contains **FIVE** questions.
(2) All questions are compulsory.
(3) Question No.**2, 3, 4** have internal options.
(4) Figures in the right side in parenthesis indicate marks.

Q:1 Differentiate between nominal and ordinal scale. **(14)**

Q:2 Discuss in detail Non-probability sampling techniques. **(14)**

OR

Q:2 The frequency distribution of number of cheques received per day for clearing of 5 branches of a bank on 100 days in the year 2014 is as follows. Find the coefficient of skewness by Bowley's method using this distribution. **(14)**

No. of cheques	0-199	200-399	400-599	600-799	800-999
No. of days	10	13	17	42	18

Q:3 (A) The probability distribution of a random variable is as follows. **(07)**

Find (i) k (ii) E(x+3) (iii) V(2x+3)

xi	0	1	2	3	4	5	Total
P(xi)	k	0.2	0.1	k	0.05	0.05	1

(B) In a bolt factory, three machines M_1, M_2, and M_3 manufacture 2000, 2500, and 4000 bolts every day. Of their output 3%, 4%, and 2.5% are defective bolts. One of the bolts is drawn very randomly from a day's production and is found to be defective. What is the probability that it was produced by machine M_2? **(07)**

OR

Q:3 (A) A random variable X denotes the number of accidents per year in a factory and the probability distribution of X is given below : **(07)**

X=x	0	1	2	3	4
P(x)	4K	15K	25K	5K	K

(i) Find the constant K and rewrite the probability distribution.
(ii) Find the probability of the event that one or two accidents will occur in

(P.T.O)

this factory during this year.

(iii) Find the probability that no accidents will take place during the year in the factory

(B) If three events A, B and C of a random experiment are independent events and P(A) = 0.2, P(B)= 0.3 and P(C) = 0.5 then find P(AUBUC) **(07)**

Q:4 Define Binomial distribution and state its properties. **(14)**

OR

Q:4 Between the hours of 2 and 4 p.m the average number of phone calls per minute coming into the switch board of a company is 2.5. Find the probabilities that during one particular minute there will be (i) no phone calls at all (ii) atleast 3 calls $(e^{-2.5}=0.0821)$ **(14)**

Q:5 Do as directed: **(14)**

1. The mean of poisson distribution is 1.44. its S.D =.....
2. State the empirical relation between mean, median, mode
3. State the formula to find variance of discrete variable.
4. Give two example of discrete variable.
5. What is the probability of having 5 Thursdays in the month of February in a year which is not a leap year?
6. Seven students of a group get 30, 30, 30, 30, 30, 30, 30 marks in a test of 35 marks. What is the standard deviation of their marks?
7. State the type of classification.