

Roll No.

Total Pages : 04

MBA/D-21

27236

BUSINESS STATISTICS

CP-102

Time : Three Hours]

[Maximum Marks : 70

Note : Attempt any *eight* questions from Part A, and *three* questions out of Part B. Each question of Part A carries 5 marks and Part B 10 marks.

Part A

1. Explain the Poisson probability function with example.
2. Give the salient features of a Normal Distribution. Write its probability function.
3. What is Sampling Distribution ? Explain also the use of this concept of statistics.
4. What are properties of T-distribution and when is it used ?
5. A person is known to hit the target in 3 out of 4 shots whereas another person is known to hit the target in 2 out of 3 shots. Find the probability of the target being hit at all when they both try.
6. Explain with example Sampling errors and Non-sampling errors.
7. Explain merits and demerits of Purposive Sampling and Judgement Sampling methods.

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1

8. In a sample of 400 parts manufacturing by a factory, the number of defective parts was found to be 30. The company, however, claimed that almost 5% of their product is defective. Is the claim eanable ? You are given Z value at 5% level of significance = 1.645.
9. Suppose that the number of claims for missing baggage average 6 per day. Find the probability that on a given day, there will be :
- (i) No claim
 - (ii) Exactly 6 claims and
 - (iii) At least two claims.
- Given $e^{-6} = 0.00248$.
10. What is Chi-square test of goodness of fit ? Explain steps involved in this test.

Part B

11. The income distribution of officers of a certain company was found to follow normal distribution. The average income of an officer was Rs. 15,00,000. The standard deviation of the income of officers was Rs. 5,00,000. If there were 242 officers drawing salary above Rs. 18,50,000, how many officers were there in the company.
- (Note. : The area under the standard normal curve between 0 and 0.7 is 0.2580.)

12. Out of a sample of 120 persons in a village, 76 persons were administered a new drug for preventing influenza and out of them, 24 persons were attacked by influenza. Out of those who were not administered the new drug, 12 persons were not affected by influenza.

Prepare :

- (a) 2×2 table showing actual and expected frequencies
(b) Use Chi-square test for finding out whether the new drug is effective or not.

(Given that the tabulated value of Chi-square 5% level for one degree of freedom is 3.84).

13. Six dice are thrown 729 times. How many times do you expect at least three dice to show a five or six ?
14. Explain various random sampling methods by giving their features, suitability and limitations. Also describe procedure to control non-sampling errors.
15. The following table gives the number of days in a 50 day period during which automobile accidents occurred in a city :

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

Fit a Poisson distribution to the data (here $e^{-m} = 0.4066$)
Calculate the values for the central line and the control
limits for mean chart and range chart and then comment
on the state of control. (Conversion factors for $n = 5$ are
 $A_2 = 0.58$, $D_3 = 0$, $D_4 = 2.115$).