

Roll No.

Total Pages : 04

BT-3/D-23

43228

APPLIED STATISTICAL ANALYSIS FOR AI
BS-CS-AIML-201A

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Section. All questions carry equal marks.

Section A

1. (a) What do you understand by census in sampling ? Describe various sampling methods.
- (b) What is error in sampling ? Discuss Sampling and non-sampling errors.
2. (a) Discuss about basic principles of experimentation.
- (b) Distinguish between census survey and sample surveys.

Section B

3. (a) What do you understand by collection of data ? What are its objectives ? Discuss different methods.

- (b) A manufacturer produces cars in two factories. 8% cars produced in factory A and 5% cars produced in factory B are defective. Factory A produces 200000 cars and factory B produces 100000 cars annually. Find the probability of purchasing a defective car. Also find the probability of purchased car was produced at factory A, given car was defective.
4. (a) Describe the different measures of central tendency and discuss their merits and demerits.
- (b) Explain the criteria of a good estimator.

Section C :

5. (a) Explain the test procedure for :
- (i) Testing of Mean
 - (ii) Equality of two means.
- (b) Define Type I and Type II errors in hypothesis testing.
6. (a) Two types of new car produced in India are tested for mileage. One group consisting of 50 cars averaged 12 kms per litre. While the other group consisting of 90 cars averaged 9.5 kms per litre. Test, whether there exists a significant difference in the petrol consumption of the two types of cars given variance of the two groups are 2.5 and 3.0 respectively. Use a level of significance of 0.01.

- (b) Explain Analysis of Variance(ANOVA). Give some examples.

Section D

7. (a) Given coefficient of correlation is 0.8, then the most likely production corresponding to a rainfall of 30" from the below data is :

	Rainfall	Production
Mean	20"	40
Standard Deviation	5"	10

- (b) Describe cluster analysis and factor analysis.

8. (a) The age and blood pressure (BP) of 10 Ex Footballers is given below :

Age (X)	Blood Pressure(Y)
42	98
36	93
55	110
58	85
35	105
65	108
60	82
50	102
48	118
51	99

- (i) Find regression equation of Y on X and X on Y . (Use the method of deviation from arithmetic mean).
- (ii) Estimate the blood pressure of a footballer whose age is 45.
- (b) Explain Karl Pearson's Coefficient of correlation.

