

Note: i) This Question paper is divided into two Parts each containing 5 questions.

ii) Students should answer **FOUR** questions only, selecting any **ONE** from each Section.

**PART-I****SECTION-A (4 MARKS)**

1. A company producing LED bulbs finds that mean life span of the population of its bulbs is 2000 hours with a standard derivation of 150 hours. A sample of 100 bulbs randomly chosen is found to have the mean life span of 1950 hours. Test, at 5% level of significance whether the mean life span of the bulbs is significantly different from 2000 hours.
2. The average monthly sales based on past experience of a particular brand of tooth paste in departmental stores is Rs 200. An advertisement campaign was made by the company and then a sample of 26 departmental stores was taken at random and found that the average sales of the particular brand of tooth paste is Rs.216 with a standard deviation of Rs 8. Does the campaign have helped in promoting the sales of a particular brand of tooth paste?
3. A study was conducted to investigate the interest of people living in cities towards self-employment. Among randomly selected 500 persons from City-I, 400 persons were found to be self-employed. From City-2, 800 persons were selected randomly and among them 600 persons are self-employed. Do the data indicate that the two cities are significantly different with respect to prevalence of self-employment among the persons? Choose the level of significance as  $\alpha = 0.5$

**SECTION-B ( $3\frac{1}{2}$  Marks)**

4. Two samples of sizes 9 and 8 give the sum of squares of deviations from their respective means as 160 inches square and 91 inches square respectively. Test the hypothesis that the variances of the two populations from which the samples are drawn are equal at 10% level of significance.
5. A test was given to five students taken at random from XII class of three schools of a town. The individual scores are

School I	9	7	6	5	8
School II	7	4	5	4	5
School III	6	5	6	7	6

Carry out the one-way ANOVA.

SET-I

PART-II

SECTION-A (4 Marks)

6. The following are the marks scored by 7 students in two tests in a subject. Calculate coefficient of correlation from the following data and interpret.

Marks in test-1 (x)	12	9	8	10	11	13	7
Marks in test-2 (y)	14	8	6	9	11	12	3

7. Out of 1800 candidates appeared for a competitive examination 625 were successful; 300 had attended a coaching class and of these 180 came out successful. Test for the association of attributes attending the coaching class and success in the examination.
8. Construct weighted aggregate index numbers of price from the following data by applying (i) Laspeyre's method (ii) Paasche's method (iii) Dorbish and Bowley's method

Commo dity	2016		2017	
	Price	Quantity	Price	Quantity
A	2	8	4	6
B	5	10	6	5
C	4	14	5	10
D	2	19	2	13

SECTION-B ( $3\frac{1}{2}$  Marks)

9. Calculate the trend values using semi-averages methods for the income from the forest department. Find the yearly increase.

Year	2008	2009	2010	2011	2012	2013
Income(in Crores)	46.17	51.65	63.81	70.99	84.91	91.64

10. The following are the information about the number of persons who are affected by Diabetes and Lung Cancer and the number of persons died due to each cause of death during a calendar year in two different districts:

Cause of Death	District A		District B	
	No. of persons Affected	No. of persons Died	No. of persons Affected	No. of persons Died
Diabetes	20,000	325	22,000	400
Lung Cancer	19,500	300	21,225	380

Find the Illness specific death rates for the two districts. Also compare health conditions of both the districts with reference to these two causes of death. Assume that a person affected by Diabetes is not affected by Lung Cancer and vice-versa.

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