UNIT–IV

TESTS OF HYPOTHESES (Large and Small Samples)

S.No		Questions	BT	CO	PO
Part – A (Short Answer Questions)					
1		Define Type-I.	L1	CO4	PO1
2		Define critical region.	L1	CO4	PO1
3		Explain Null and Alternative Hypothesis.	L4	CO4	PO1
4		Write Standard error formula for Method of Pooling in Proportions.	L1	CO4	PO1
5		The mean and standard deviation of a population are11795 and 14054 respectively. If n=50, find 95% confidence interval for the mean.	L3	CO4	PO1
6		A die is tossed 256 times and it turns up with an even digit 150 times. If the die is biased find the test statistic value.	L3	CO4	PO1
7		If = 400, = 40, = 38, = 10 then find the 95% confidence limits for the population.	L1	CO4	PO1
8		Define type-II error.	L2,L3	CO4	PO1
9		Given $_1$ = 1200, $_2$ = 900, $_1$ = 0.3, $_2$ = 0.25 then find the test statistic value for difference of two proportions of large samples.	L2	CO4	PO1
Part – B (Long Answer Questions)					
11	a)	An ambulance service claims that it takes on the average less than 10 mins to reach its destination in emergency calls a sample of 36 calls has a mean of 11 mins and the variance of 16 mins. Test the claim at 0.05 level of significance.	L3,L4	CO4	PO2
	b)	Explain the steps involved in the procedure for testing of Hypothesis	L2,L4,L5	CO4	PO3

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<tr><td>12</td><td>a)</td><td>The mean yield of wheat from a district A was 210 pounds with S.D 10 pounds per Acre from a sample of 100 plots. In another district the mean yield was 220 pounds with S. D 12 pounds from a sample of 150 plots. Assuming that the S.D of yield in the entire state was 11 pounds ,test whether there is any significant difference between the mean yield of crops.</td><td>L1,L4,L5</td><td>CO4</td><td>PO3</td></tr>
<tr><td></td><td>b)</td><td>Samples of students were drawn from two universities and from their weights in kilograms, mean and standard deviation are calculated and shown below. Make a large sample test to test the significance of the difference between the means
<table>
<tr><td></td><td>Mean</td><td>S.D</td><td>Size of the sample</td></tr>
<tr><td>University A</td><td>55</td><td>10</td><td>400</td></tr>
<tr><td>University B</td><td>57</td><td>15</td><td>100</td></tr>
</table></td><td>L3,L4</td><td>CO4</td><td>PO2</td></tr>
<tr><td>13</td><td>a)</td><td>A die was thrown 9000 times and of these 3220 yielded a 3 or 4. Is this consistent with the hypothesis that the die was unbiased?</td><td>L2,L3</td><td>CO4</td><td>PO3</td></tr>
<tr><td></td><td>b)</td><td>Random samples of 400 men and 600 women were asked whether they would like to have a flyover near their residence. 200 men and 325 women were in favor of the proposal. Test the hypothesis that proportions of men and women in favor of proposal are same at 5% level.</td><td>L3,L4</td><td>CO4</td><td>PO3</td></tr>
<tr><td>14</td><td>a)</td><td>A cigarette manufacturing firm claims that its brand A line of cigarettes outsells its brand B by 8%. If it is found that 42 out of a sample of 200 smokers prefer brand A and 18 out of another sample of 100 smokers prefer brand B, test whether the 8% difference is a valid claim.</td><td>L3,L4</td><td>CO4</td><td>PO3</td></tr>
<tr><td></td><td>b)</td><td>In two large populations, there are 30% and 25% respectively of fair-haired people. Is this difference likely to be hidden in samples of 1200 and 900 respectively from the two populations.</td><td>L3,L4</td><td>CO4</td><td>PO3</td></tr>
<tr><td>15</td><td>a)</td><td>It is claimed that a random sample of 49 tyres has a mean life of 15200kms. This sample was drawn from a population whose mean is 15150kms and a standard deviation 1200 kms. Test the significance at 0.05 level for H1: $\mu \neq 15200$</td><td>L1,L4</td><td>CO4</td><td>PO1</td></tr>
<tr><td></td><td>b)</td><td>Explain Type-I and Type-II errors in detail with one example each.</td><td>L1,L4</td><td>CO4</td><td>PO1</td></tr>
<tr><td>16</td><td>a)</td><td>Write a short note on one-tailed and two-tailed tests.</td><td>L1,L3</td><td>CO4</td><td>PO2</td></tr>
<tr><td></td><td>b)</td><td>In a sample of 1000 people in Telangana 540 are rice eaters and the rest are wheat eaters. Can we assume that both rice and wheat are equally popular in this state at 1% level of significance.</td><td>L3,L4</td><td>CO4</td><td>PO3</td></tr>
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