



Reg. No.:

Name:

University of Kerala

W7092

Third Semester FYUGP Degree Examination, November 2025

Discipline Specific Core Course

STATISTICS

UK3DSCSTA205 - STATISTICAL TOOLS FOR DATA ANALYSIS-II

Academic Level: 200-299

2024 Admission

Time: 1 Hour 30 Minutes(90 Mins.)

Max. Marks: 42

Part A. 6 Marks.Time:6 Minutes.(Cognitive Level:Remember(RE)/Understand(UN)) Objective Type. 1 Mark Each.Answer all questions

Qn No.	Question	CL	CO
1	A statistical technique specifically designed to test whether the means of more than two quantitative population is known as _____ Options : A)Z test B)ANOVA C)Chi-square test D)T TEST	RE	4
2	A _____ is a value calculated from a sample, used to estimate a population parameter.	RE	1
3	Give the Z statistic to test the mean population when σ is known.	UN	2
4	The sampling distribution of the sample mean follows _____ distribution if population is normal.	UN	1
5	Which test is used to compare the means of two independent small samples?	UN	3
6	ANOVA is used to test whether multiple population means are equal. True OR False	UN	4

Part B.8 Marks.Time:24 Minutes.(Cognitive Level:Understand(UN)/Apply(AP))Short Answer. 2 marks each.Answer all questions

Qn No.	Question	CL	CO
7	Define Type II error	UN	1
8	Define population and sample with example.	UN	1
9	Determine the test statistic used in a chi-square test of independence?	AP	3
10	Formulate the mathematical model for One way ANOVA	AP	4

Qn No.	Question	CL	CO

Part C. 28 Marks. Time: 60 Minutes (Cognitive Level: Apply (AP)/Analyse (AN)/Evaluate (EV)/Create (CR)) Long Answer. 7 marks each. Answer all 4 Questions choosing among options * within each question

Qn No.	Question	CL	CO
11	<p>A)</p> <p>A pharmaceutical company wants to compare the average recovery time from a certain illness for patients using two different drugs. A random sample of 40 patients using Drug A had an average recovery time of 6.2 days. Another random sample of 50 patients using Drug B had an average recovery time of 5.8 days. From past research, it is known that the recovery times for Drug A have a standard deviation of 1.5 days, and for Drug B, the standard deviation is 1.2 days.</p> <p>Is there evidence that the average recovery times differ between the two drugs, using a 5% significance level?</p> <p>OR</p> <p>B)</p> <p>A company wants to compare the average productivity of employees who work from home versus those who work in the office. A random sample of 20 work-from-home employees shows an average of 42 completed tasks per week, with a sample standard deviation of 6. A random sample of 18 office employees shows an average of 39 completed tasks per week, with a sample standard deviation of 5.</p> <p>At the 5% significance level, test whether there is a significant difference in the average productivity of work-from-home employees and office employee</p>	AP	2, 3
12	<p>A)</p> <p>In a survey of 600 people, 240 were left-handed. Test whether the proportion of left-handers is 0.40.</p> <p>OR</p> <p>B)</p> <p>The following are the marks obtained by two groups of students</p> <p>Group A: 14, 19, 20, 21, 22, 24</p> <p>Group B: 8, 13, 15, 16, 19, 20</p> <p>Test whether the two groups differ significantly in their mean marks at 5% level using <i>t</i>-test for independent samples.</p>	AN	3, 3
13	<p>A)</p> <p>Analyze the procedure for testing the given population variance.</p> <p>OR</p> <p>B)</p>	EV	3, 3

Qn No.	Question	CL	CO																																																				
	<p>Eleven school boys were given a test in Statistics. They were given a month's tuition and a second test was held at the end of it. Do the marks give evidence that the students have benefited by the extra coaching?</p> <p>Boys: 1 2 3 4 5 6 7 8 9 10 11</p> <p>Marks in 1st test: 22 20 19 20 18 20 18 17 23 16 19</p> <p>Marks in 2nd test: 24 19 22 18 20 22 20 20 23 20 22</p>																																																						
14	<p>A)</p> <p>The following table gives the number of refrigerators sold by 4 salesmen in three months May, June and July.</p> <table border="1" data-bbox="140 831 924 1099"> <thead> <tr> <th data-bbox="140 831 296 887">Month</th> <th colspan="4" data-bbox="296 831 924 887">Salesmen</th> </tr> <tr> <td data-bbox="140 887 296 936"></td> <th data-bbox="296 887 453 936">A</th> <th data-bbox="453 887 609 936">B</th> <th data-bbox="609 887 766 936">C</th> <th data-bbox="766 887 924 936">D</th> </tr> </thead> <tbody> <tr> <td data-bbox="140 936 296 992">May</td> <td data-bbox="296 936 453 992">50</td> <td data-bbox="453 936 609 992">40</td> <td data-bbox="609 936 766 992">48</td> <td data-bbox="766 936 924 992">39</td> </tr> <tr> <td data-bbox="140 992 296 1048">June</td> <td data-bbox="296 992 453 1048">46</td> <td data-bbox="453 992 609 1048">48</td> <td data-bbox="609 992 766 1048">50</td> <td data-bbox="766 992 924 1048">45</td> </tr> <tr> <td data-bbox="140 1048 296 1099">July</td> <td data-bbox="296 1048 453 1099">39</td> <td data-bbox="453 1048 609 1099">44</td> <td data-bbox="609 1048 766 1099">40</td> <td data-bbox="766 1048 924 1099">39</td> </tr> </tbody> </table> <p>(i) Create the model for analyzing the sales performance of the four salesmen.</p> <p>(ii) Apply a statistical test to determine whether there is a significant difference in sales among the four salesmen.</p> <p>OR</p> <p>B)</p> <p>Design a statistical test to compare the effect of three types of fuel A, B and C on vehicle performance measured in km/lr. Using the given data, construct the hypothesis and conclude if there is any significant difference.</p> <table border="1" data-bbox="140 1621 1010 1749"> <tbody> <tr> <td data-bbox="140 1621 225 1659">A:</td> <td data-bbox="225 1621 296 1659">15</td> <td data-bbox="296 1621 368 1659">16</td> <td data-bbox="368 1621 440 1659">14</td> <td data-bbox="440 1621 512 1659">17</td> <td data-bbox="512 1621 584 1659">21</td> <td data-bbox="584 1621 655 1659">24</td> <td data-bbox="655 1621 727 1659">33</td> <td data-bbox="727 1621 1010 1659">21</td> </tr> <tr> <td data-bbox="140 1659 225 1697">B:</td> <td data-bbox="225 1659 296 1697">18</td> <td data-bbox="296 1659 368 1697">17</td> <td data-bbox="368 1659 440 1697">19</td> <td data-bbox="440 1659 512 1697">14</td> <td data-bbox="512 1659 584 1697">23</td> <td data-bbox="584 1659 655 1697">34</td> <td></td> <td></td> </tr> <tr> <td data-bbox="140 1697 225 1736">C:</td> <td data-bbox="225 1697 296 1736">20</td> <td data-bbox="296 1697 368 1736">22</td> <td data-bbox="368 1697 440 1736">21</td> <td data-bbox="440 1697 512 1736">12</td> <td data-bbox="512 1697 584 1736">17</td> <td data-bbox="584 1697 655 1736">27</td> <td data-bbox="655 1697 727 1736">31</td> <td></td> </tr> </tbody> </table>	Month	Salesmen					A	B	C	D	May	50	40	48	39	June	46	48	50	45	July	39	44	40	39	A:	15	16	14	17	21	24	33	21	B:	18	17	19	14	23	34			C:	20	22	21	12	17	27	31		CR	4, 4
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