JHARKHAND Rai University
RANCHI

End Semester/Reappear (Semester III) Examination December, 2024

Programme:B. Sc. (Hons.) Agriculture

Course:Statistical Method **Full Marks: 50**

Course Code:13A.215 **Time: 2 Hrs.**

Enrolment no. _____

<table>
<tr><th>Q.No.</th><th>Questions</th><th>CO</th><th>Bloom Taxonomy Category</th><th>Marks</th></tr>
<tr><td colspan="5">Section I</td></tr>
<tr><td>1</td><td>Short Answer type questions.</td><td></td><td></td><td rowspan="11">4 x 5 = 20</td></tr>
<tr><td rowspan="3">a</td><td>A bag contains 150 balls numbered from 1 to 150. Find the probability that it is either divisible by 3 or 5.</td><td>CO1</td><td>Understand</td></tr>
<tr><td>or</td><td></td><td></td></tr>
<tr><td>A bag contains 4 red balls, 3 white balls and 5 black balls. Five balls are drawn at random. What is the probability of drawing 2 white and 3 black.</td><td>CO1</td><td>Understand</td></tr>
<tr><td rowspan="3">b</td><td>How to find rank correlation coefficient when ranks are not given.</td><td>CO2</td><td>Remember</td></tr>
<tr><td>or</td><td></td><td></td></tr>
<tr><td>From the given data, compute the coefficient of correlation between X and Y series
<table>
<tr><th></th><th>X series</th><th>Y series</th></tr>
<tr><td>Number of Items</td><td>15</td><td>15</td></tr>
<tr><td>Arithmetic Mean</td><td>25</td><td>18</td></tr>
<tr><td>Squares of deviations from mean</td><td>136</td><td>138</td></tr>
</table></td><td>CO2</td><td>Understand</td></tr>
<tr><td rowspan="3">c</td><td>Define type I and type II error in test hypothesis.</td><td>CO3</td><td>Remember</td></tr>
<tr><td>or</td><td></td><td></td></tr>
<tr><td>Write procedure for testing of hypothesis.</td><td>CO3</td><td>Remember</td></tr>
<tr><td rowspan="3">d</td><td>Define Completely Randomized Design (C.R.D).</td><td>CO4</td><td>Remember</td></tr>
<tr><td>or</td><td></td><td></td></tr>
<tr><td>Define population, sample and sample size.</td><td>CO4</td><td>Remember</td></tr>
<tr><td colspan="5">Section II</td></tr>
<tr><td colspan="2">Long Answer type questions.</td><td></td><td></td><td rowspan="5">2 x 15 = 30</td></tr>
<tr><td rowspan="3">2</td><td>A population consists of six numbers 4, 8, 12, 16, 20, 24. Consider all samples of size two which can be drawn without replacement from this population, find (i) Population mean (ii) population standard deviation (iii) mean of sampling distribution of means (iv) standard deviation of the sampling distribution of means.</td><td>CO4</td><td>Apply</td></tr>
<tr><td>or</td><td></td><td></td></tr>
<tr><td>The following data give the yield on 12 plots of land in three samples, each of 4 plots, under three varieties of fertilizers A, B, and C.
A B C
25 20 24
22 17 26
24 16 30
21 19 20
Is there any significant difference in the average yield of land under the three varieties of fertilizers? [Given that F at degree of freedom (2, 9) at 5% level = 4.26]</td><td>CO4</td><td>Apply</td></tr>
<tr><td>3</td><td>An in complete distribution is given below:
<table>
<tr><th>Variable</th><th>10 – 20</th><th>20 – 30</th><th>30 – 40</th><th>40 – 50</th><th>50 – 60</th><th>60 – 70</th><th>70 – 80</th></tr>
<tr><td>Frequency</td><td>12</td><td>30</td><td>?</td><td>65</td><td>?</td><td>25</td><td>18</td></tr>
</table>
Given that the median M = 46 and N = 229. Evaluate</td><td>CO1</td><td>Evaluate</td></tr>
</table>

<table>
<tr><td colspan="5">or</td><td></td><td></td></tr>
<tr><td colspan="5">From the prices of shares of X and Y given below, state which share is more stable in value:
<table><tr><td>X</td><td>41</td><td>44</td><td>43</td><td>48</td><td>45</td><td>46</td><td>49</td><td>50</td></tr><tr><td>Y</td><td>91</td><td>93</td><td>96</td><td>92</td><td>90</td><td>97</td><td>99</td><td>94</td></tr></table></td><td>CO1</td><td>Evaluate</td><td></td></tr>
</table>

Course Outcomes:

At the end of the course student will be able to

CO1 Differentiate between the mean, the median, and the mode of data; determine the value of the mean, the median, and the mode of ungrouped and grouped data; identify the relationships among the three measures of central tendency for symmetrical and skewed distributions; state the advantages and disadvantages of the three measures.

CO2 Drawing a scatter plot for a set of ordered pairs, computing and interpreting a coefficient of correlation, determining the equation of a regression line.

CO3 Formulate null and alternative hypotheses for applications involving a single population mean or proportion; correctly formulate a decision rule for testing a hypothesis.

CO4 Constructing an ANOVA table for a one – way and two ways ANOVA when there are equal sample sizes, interpreting the results from a one–way and two–way ANOVA test.