JHARKHAND Rai University
RANCHI

End Semester/Reappear (Semester II) Examination May 2025

Programme: BBA & B.COM
Course:Quantitative Techniques for Business **Full Marks: 70**
Course Code:11.CC106 & 32ACC106 **Time: 3 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>If the probability of a bad reaction from a certain injection is 0.001, determine the chance that out of 2,000 individuals more than two will get a bad reaction.</td><td>CO1</td><td>Apply</td></tr>
<tr><td>or</td><td></td><td></td></tr>
<tr><td>If A and B are two events such that P (A) = 0.3, P (B) = 0.6 and P (B/A) = 0.5, find P(A/B) and P(A U B).</td><td>CO1</td><td>Understand</td></tr>
<tr><td rowspan="3">b</td><td>Find the Quartiles of the following no. – 29, 12, 19, 24, 36, 21, 33, 35</td><td>CO2</td><td>Understand</td></tr>
<tr><td>or</td><td></td><td></td></tr>
<tr><td>Define the Arithmetic and weighted arithmetic mean with example</td><td>CO2</td><td>Remember</td></tr>
<tr><td rowspan="3">c</td><td>Discuss difference between Correlation and regression.</td><td>CO3</td><td>Understand</td></tr>
<tr><td>or</td><td></td><td></td></tr>
<tr><td>Write the regression equation and regression coefficient of X on Y and Y on X.</td><td>CO3</td><td>Understand</td></tr>
<tr><td rowspan="3">d</td><td>State the consumer price Index number. What are the utilities of CPI?</td><td>CO4</td><td>Remember</td></tr>
<tr><td>or</td><td></td><td></td></tr>
<tr><td>Construct index numbers of price from the following data by applying: Laspeyre’s method
<table>
<tr><th>Commodity</th><th colspan="2">2007</th><th colspan="2">2008</th></tr>
<tr><th></th><th>price</th><th>Quantity</th><th>Price</th><th>Quantity</th></tr>
<tr><td>A</td><td>2</td><td>8</td><td>4</td><td>6</td></tr>
<tr><td>B</td><td>5</td><td>10</td><td>6</td><td>5</td></tr>
<tr><td>C</td><td>4</td><td>14</td><td>5</td><td>10</td></tr>
<tr><td>D</td><td>2</td><td>19</td><td>2</td><td>13</td></tr>
</table></td><td>CO4</td><td>Understand</td></tr>
<tr><td colspan="5">Section II</td></tr>
<tr><td></td><td>Long Answer type questions.</td><td></td><td></td><td rowspan="6">3 x 10 = 30</td></tr>
<tr><td rowspan="3">2</td><td>Urn A contains 2 white, 1 black and 3 red balls, urn B contains 3 white, 2 black and 4 red balls and urn C contains 4 white, 3 black and 2 red balls. One urn is chosen at random and 2 balls are drawn at random from the urn. If the chosen balls happen to be red and black, what is the probability that both balls from urn B?</td><td>CO1</td><td>Apply</td></tr>
<tr><td>or</td><td></td><td></td></tr>
<tr><td>A company has two plants to manufacture scooters. Plant I manufactures 70% of the scooters and plant II manufactures 30%.At plant I, 80% of the scooters are rated as of standard quality and at plant II, 90% of the scooters are rated as of standard quality. A scooter is chosen at random and is found to be of standard quality. What is the probability that it has come from plant II?</td><td>CO1</td><td>Analyze</td></tr>
<tr><td rowspan="3">3</td><td>Calculate the Quartiles of the following Distribution –
<table>
<tr><td>Ages (Years)</td><td>15- 20</td><td>20 - 25</td><td>25 – 30</td><td>30 – 35</td><td>35 – 40</td><td>40 – 45</td><td>45 – 50</td><td>50 -55</td></tr>
<tr><td>No. of Employees</td><td>13</td><td>29</td><td>46</td><td>60</td><td>112</td><td>94</td><td>45</td><td>21</td></tr>
</table></td><td>CO2</td><td>Apply</td></tr>
<tr><td>or</td><td></td><td></td></tr>
<tr><td>Find the Standard Deviation (S D) about mean. –
<table>
<tr><td>Monthly Income</td><td>100 - 110</td><td>110 - 120</td><td>120 - 130</td><td>130 - 140</td><td>140 - 150</td><td>150 - 160</td><td>160 - 170</td><td>170 -180</td></tr>
<tr><td>Frequency</td><td>16</td><td>24</td><td>59</td><td>100</td><td>41</td><td>31</td><td>19</td><td>10</td></tr>
</table></td><td>CO2</td><td>Apply</td></tr>
<tr><td rowspan="3">4</td><td>An examination of eight applicant for a clerical post was taken a firm. From the marks obtained by the applicants in the ACCOUNTANCY and STATISTICS papers, compute rank coefficient of correlation.
<table>
<tr><td>Marks in Accountancy</td><td>15</td><td>20</td><td>28</td><td>12</td><td>40</td><td>60</td><td>20</td><td>80</td></tr>
<tr><td>Marks in Statistics</td><td>40</td><td>30</td><td>50</td><td>30</td><td>20</td><td>10</td><td>30</td><td>60</td></tr>
</table></td><td>CO3</td><td>Apply</td></tr>
<tr><td colspan="2">or</td><td></td><td></td></tr>
</table>

Three judges A, B, C give the following ranks. Find which pair of judges has common approach

A:	1	6	5	10	3	2	4	9	7	8
B:	3	5	8	4	7	10	2	1	6	9
C:	6	4	9	8	1	2	3	10	5	7

CO3 | Apply

Section III

Application based questions

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The group indices and the corresponding weights for the working class cost of living index numbers in an industrial city for the year 2021 and 2025 are given below

Group	Weight	Group Index	
		2021	2025
Food	71	370	380
Clothing	3	423	504
Fuel	9	469	336
Hose Rent	7	110	116
Miscellaneous	10	279	283

Compute the cost of living indices for the two years 2021 and 2025. If a worker was getting 300 p.m. in 2021, do think that he should be given some extra allowance so that he can maintain his 2021 standard of living? If so what should be the minimum amount of this extra allowance?

CO4 | Analyze

or

a. Find the index number from the following data by Arithmetic Mean Method,

Commodity	Base Price	Current Price	Weight
Rice	30	52	8
Wheat	25	30	6
Fish	130	150	3
Potato	35	49	5
Oil	70	105	7

b.An enquiry into the budget of middle class families in a village near Hyderabad gave the following Information

Expenses on	Food 30%	Rent 25%	Clothing 15%	Education 10%	Misc. 20%
Price(Rs.) 2007	1800	1000	700	400	700
Price(Rs.) 2008	2000	1200	900	500	1000

Construct cost of living index.

CO4 | Analyze

1 x 20 = 20

COURSE OUTCOME

CO 1Able to find the central tendency and dispersion of a random variable.

CO 2: Able to find the Index Number for framing suitable policies and take decisions relating to wages, prices and consumption etc.

CO 3: Able to find the relationship between variables through mathematical tools - correlation & regression as well as understand its practical application in real world.

CO 4: Able to solve real world problems of probability using certain theorem and axioms.

CO 5: Demonstrate an ability to apply various statistical tools to solve business problem