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22STU101N / 22STU101 / 18STU01

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2024
(First Semester)

Branch – **STATISTICS**

DESCRIPTIVE STATISTICS

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Schedule is usually filled in by an (i) Investigator (ii) Agent (iii) Informant (iv) Respondent	K1	CO1
	2	Ogive is a graphic method of determining (i) Mean (ii) Median (iii) Mode (iv) Standard Deviation	K2	CO1
2	3	The relation among mean, median and mode is (i) Mode = 2 Median – 3 Mean (ii) Mode = 3 Median – 2 Mean (iii) Median = 3 Mean – 2 Mode (iv) Mean = 2 Median – 3 Mode	K1	CO2
	4	Harmonic mean is the reciprocal of (i) Arithmetic mean (ii) Mode (iii) Geometric mean (iv) Median	K2	CO2
3	5	Lack of symmetry of tails of a frequency curve is called (i) Skewness (ii) Kurtosis (iii) Moments (iv) Dispersion	K1	CO3
	6	For a negatively skewed distribution ,the correct inequality is (i) Mode<median (ii) Mean<median (iii) Mean<mode (iv) None of the above	K2	CO3
4	7	The value of co-efficient of correlation lies between (i) 0 and 1 (ii) 0 and -1 (iii) +1 and -1 (iv) -1 and -2	K1	CO4
	8	If r = ± 1, the two lines of regression are (i) Coincident (ii) Parallel (iii) Perpendicular to each other (iv) None of the above	K2	CO4
5	9	Y= a + bX is the linear mathematical equation of the (i) First degree parabola (ii) Second degree parabola (iii) Third degree parabola (iv) Fourth degree parabola	K1	CO5
	10	A polynomial of the form $Y= a+bx+cx^2$ is called (i) Linear equation (ii) Third degree equation (iii) Second degree equation (iv) None of the above	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

<table>
<tr><th>Module No.</th><th>Question No.</th><th>Question</th><th>K Level</th><th>CO</th></tr>
<tr><td rowspan="3">1</td><td>11.a.</td><td>Define classification. Explain the different types of classification.</td><td rowspan="3">K1</td><td rowspan="3">CO1</td></tr>
<tr><td colspan="2">(OR)</td></tr>
<tr><td>11.b.</td><td>What are the different methods of Diagrammatic presentation? Explain any two of them.</td></tr>
<tr><td rowspan="3">2</td><td>12.a.</td><td>Consider the following distribution:
<table><tr><td>X</td><td>0-10</td><td>10-20</td><td>20-30</td><td>30-40</td><td>40-50</td></tr><tr><td>f</td><td>12</td><td>18</td><td>20</td><td>25</td><td>23</td></tr></table>Compute mean, median and mode.</td><td rowspan="3">K2</td><td rowspan="3">CO2</td></tr>
<tr><td colspan="2">(OR)</td></tr>
<tr><td>12.b.</td><td>A analysis of monthly wages paid to the workers of two firms A and B belonging to the same industry gives the following results:
<table><tr><td></td><td>Firm A</td><td>Firm B</td></tr><tr><td>No. of workers</td><td>500</td><td>600</td></tr><tr><td>Average daily wage</td><td>186</td><td>175</td></tr><tr><td>Variance of distribution of wages</td><td>81</td><td>100</td></tr></table>(i) Which firm A or B, has a larger wage bill?
(ii) In which firm, A or B, is there greater variability in individual wages?</td></tr>
<tr><td rowspan="3">3</td><td>13.a.</td><td>Calculate Pearson's coefficient of skewness:
<table><tr><td>X</td><td>12.5</td><td>17.5</td><td>22.5</td><td>27.5</td><td>32.5</td><td>37.5</td><td>42.5</td><td>47.5</td></tr><tr><td>f</td><td>28</td><td>42</td><td>54</td><td>108</td><td>129</td><td>61</td><td>45</td><td>33</td></tr></table></td><td rowspan="3">K3</td><td rowspan="3">CO3</td></tr>
<tr><td colspan="2">(OR)</td></tr>
<tr><td>13.b.</td><td>Calculate the first four moments of the following distribution about the mean and hence find β_1 & β_2.
<table><tr><td>X</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr><tr><td>f</td><td>1</td><td>8</td><td>28</td><td>56</td><td>70</td><td>56</td><td>28</td><td>8</td><td>1</td></tr></table></td></tr>
<tr><td rowspan="3">4</td><td>14.a.</td><td>Compute Spearman's rank correlation for the following observation:
<table><tr><td>Candidate</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr><tr><td>Judge X</td><td>20</td><td>22</td><td>28</td><td>23</td><td>30</td><td>30</td><td>23</td><td>24</td></tr><tr><td>Judge Y</td><td>28</td><td>24</td><td>24</td><td>25</td><td>26</td><td>27</td><td>32</td><td>30</td></tr></table>Marks are awarded out of 35.</td><td rowspan="3">K3</td><td rowspan="3">CO4</td></tr>
<tr><td colspan="2">(OR)</td></tr>
<tr><td>14.b.</td><td>Find the most likely production corresponding to a rainfall 40 from the following data:
<table><tr><td></td><td>Rainfall</td><td>Production</td></tr><tr><td>Average</td><td>30</td><td>500</td></tr><tr><td>Standard Deviation</td><td>5</td><td>100</td></tr><tr><td>Coefficient of Correlation (r)</td><td colspan="2">0.8</td></tr></table></td></tr>
<tr><td rowspan="3">5</td><td>15.a.</td><td>Fit a straight line to the following data:
<table><tr><td>Year</td><td>2001</td><td>2002</td><td>2003</td><td>2004</td><td>2005</td><td>2006</td><td>2007</td><td>2008</td></tr><tr><td>Earnings in Lakhs</td><td>38</td><td>40</td><td>65</td><td>72</td><td>69</td><td>60</td><td>87</td><td>95</td></tr></table></td><td rowspan="3">K3</td><td rowspan="3">CO5</td></tr>
<tr><td colspan="2">(OR)</td></tr>
<tr><td>15.b.</td><td>How to analysis the data using MS Excel?</td></tr>
</table>

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

<table>
<tr><th>Module No.</th><th>Question No.</th><th>Question</th><th>K Level</th><th>CO</th></tr>
<tr><td>1</td><td>16</td><td>Define secondary data. State their chief sources. What precautions should be taken while using the m.</td><td>K1</td><td>CO1</td></tr>
<tr><td>2</td><td>17</td><td>Calculate the mean and standard deviation for the following table giving the age distribution of 542 members.
<table>
<tr><td>Age in Years</td><td>20-30</td><td>30-40</td><td>40-50</td><td>50-60</td><td>60-70</td><td>70-80</td><td>80-90</td></tr>
<tr><td>No. of members</td><td>3</td><td>61</td><td>132</td><td>153</td><td>140</td><td>51</td><td>2</td></tr>
</table></td><td>K2</td><td>CO2</td></tr>
<tr><td>3</td><td>18</td><td>Analyse the frequency distribution by the method of moments:
<table>
<tr><td>X</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr>
<tr><td>f</td><td>1</td><td>3</td><td>7</td><td>3</td><td>1</td></tr>
</table></td><td>K3</td><td>CO3</td></tr>
<tr><td>4</td><td>19</td><td>Distinguish between Correlation & Regression and its properties.</td><td>K1</td><td>CO4</td></tr>
<tr><td>5</td><td>20</td><td>Fit an exponential curve of the form $Y = ab^X$ to the following data:
<table>
<tr><td>X</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr>
<tr><td>Y</td><td>1</td><td>1.2</td><td>1.8</td><td>2.5</td><td>3.6</td><td>4.7</td><td>6.6</td><td>9.1</td></tr>
</table></td><td>K3</td><td>CO5</td></tr>
</table>

Z-Z-Z END