Name: **Enrolment No:**	UPES UNIVERSITY OF TOMORROW

UPES

End Semester Examination, Dec 2024

Course: Quantitative Techniques for Managers **Semester: I**

Program: MBA-ALL **Time: 03 hrs.**

Course Code: DSQT7006 **Max. Marks: 100**

Instructions:

1. All questions are compulsory**.**

SECTION A (10Qx2M=20Marks)

S. No.		Marks	CO
Q1.1	In a positively skewed distribution, which of the following is the correct relationship between mean, median, and mode? (a) Mean=Median=Mode (b) Mean<Median<Mode (c) Mean >Median>Mode (d) Mode>Median>Mean	**2**	**CO1**
Q1.2	Given that P(A)=3/8, P(B)=5/8 and P(A∪B) =3/4, then P(A∩B) is (a) 1/4 (b) 1 (c) 3/4 (d) 1/8	**2**	**CO1**
Q1.3	The mean of a set of data is 50 and the median is 45. What is the likely shape of the distribution? a) Symmetrical b) Skewed left c) Skewed right d) Cannot be determined	**2**	**CO1**
Q1.4	The regression equation $y = x^2 + 5$ represents: (a) A linear relationship between two variables (b) A quadratic relationship between two variables (c) An exponential relationship between two variables (d) No relationship between two variables	**2**	**CO1**
Q1.5	A company's HR department analyzed the ages of its employees and found that the mean age is 30 years, and the median age is 28 years. Determine the mode of the age distribution. What does the result suggest about the skewness of the data? a) Mode is 24 years, indicating a positively skewed distribution. b) Mode is 26 years, indicating a negatively skewed distribution. c) Mode is 28 years, indicating a perfectly symmetrical distribution. d) Mode is 30 years, indicating a uniform distribution.	**2**	**CO1**
Q1.6	The range of multiple correlation coefficient R is: (a) -1 to 1 (b) 0 to 1 (c) -1 to 0 (d) 0 to ∞	**2**	**CO1**

<table>
<tr><td>Q1.7</td><td>Whether classification is done first or tabulation?
(a) Classification follows tabulation
(b) Classification precedes tabulation
(c) Both are done simultaneously
(d) No criterion</td><td>2</td><td>CO1</td></tr>
<tr><td>Q1.8</td><td>Probability is expressed as:
(a) ratio (b) percentage (c) proportion (d) all of these</td><td>2</td><td>CO1</td></tr>
<tr><td>Q1.9</td><td>The mean of the Binomial Distribution with n=5 and p= $\frac{1}{4}$ is
(a) $\frac{4}{5}$ (b) $\frac{7}{8}$ (c) $\frac{5}{4}$ (d) $\frac{4}{7}$</td><td>2</td><td>CO1</td></tr>
<tr><td>Q1.10</td><td>A temperature scale data is a ……. scale data type.
(a) nominal (b) ordinal (c) interval (d) ratio</td><td>2</td><td>CO1</td></tr>
<tr><td colspan="4">SECTION B (4Qx5M= 20 Marks)</td></tr>
<tr><td>Q2</td><td>Enlighten various data types based on their scale of measurement with appropriate example.</td><td>5</td><td>CO2</td></tr>
<tr><td>Q3</td><td>How can skewness and kurtosis be applied to analyze business results, and what insights can they provide about data distribution?</td><td>5</td><td>CO2</td></tr>
<tr><td>Q4</td><td>Explain Spearman’s Rank Correlation. What is the difference between repeating and non-repeating ranks in this method?</td><td>5</td><td>CO2</td></tr>
<tr><td>Q5</td><td>In business analytics, different types of means are used based on the nature of the data and the problem context. Discuss business scenarios geometric mean and harmonic mean would be the most appropriate measure, explaining why it is preferred in those cases.</td><td>5</td><td>CO2</td></tr>
<tr><td colspan="4">SECTION-C
3Qx10M=30 Marks</td></tr>
<tr><td>Q 6</td><td>A professor wants to emphasize to students how consistent quiz performance can influence their final grades, despite exams accounting for 90% of the final grade. To support this, the professor shares data from a sample of 15 students, showing both their quiz averages and final grade averages.
<table>
<tr><td>Quiz Avg.</td><td>59</td><td>92</td><td>72</td><td>90</td><td>95</td><td>87</td><td>89</td><td>77</td><td>76</td><td>65</td><td>97</td><td>42</td><td>94</td><td>62</td><td>91</td></tr>
<tr><td>Final Avg</td><td>65</td><td>84</td><td>77</td><td>80</td><td>77</td><td>81</td><td>80</td><td>84</td><td>80</td><td>69</td><td>83</td><td>40</td><td>78</td><td>65</td><td>90</td></tr>
</table>
(a) Identify the dependent (Y) variable and the independent (X) variable.
(b) Using this data, draw a scatter plot to visually examine any relationship between quiz scores and final grades.
(c) Is the observed relationship more likely to be linear or curvilinear? Explain your interpretation based on the data and plot.</td><td>10</td><td>CO3</td></tr>
<tr><td>Q7</td><td>Two dice are thrown simultaneously. Find the probability of getting:
(a) A doublet of an odd number
(b) A total sum as 8
(c) A multiple of 2 on one dice and a multiple of 3 on the other dice.
(d) Show 4 on the first dice
(e) A total sum at most 5</td><td>10</td><td>CO3</td></tr>
</table>

<table>
<tr><td>Q8</td><td>What is a Binomial distribution used for? What are its important properties with any two appropriate examples?</td><td>10</td><td>CO3</td></tr>
<tr><td colspan="4">SECTION-D
2Qx15M= 30 Marks</td></tr>
<tr><td>Q 9</td><td>(a) Throw light on correlation analysis and regression analysis.
(b) The following data give the experience of machine operators and their performance rating given by the number of good parts turned out per 100 pieces:
<table>
<tr><td>Operator</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>Experience (in years)</td><td>16</td><td>12</td><td>18</td><td>4</td><td>3</td><td>10</td><td>5</td><td>12</td></tr>
<tr><td>Performance Ratings</td><td>87</td><td>88</td><td>89</td><td>68</td><td>78</td><td>80</td><td>75</td><td>83</td></tr>
</table>
Calculate the regression lines of performance ratings on experience and estimate the probable performance if an operator has 7 years of experience.</td><td>5+10</td><td>CO4</td></tr>
<tr><td>Q10</td><td>A retail company tracks the monthly sales performance of three different products (Product A, Product B, and Product C) over the past 7 months. The sales data (in units sold) is provided below. Compare the variability of the three products and comment on which product shows the most consistent sales performance.
<table>
<tr><th>A</th><th>B</th><th>C</th></tr>
<tr><td>120</td><td>150</td><td>130</td></tr>
<tr><td>110</td><td>170</td><td>120</td></tr>
<tr><td>125</td><td>160</td><td>135</td></tr>
<tr><td>115</td><td>155</td><td>140</td></tr>
<tr><td>130</td><td>165</td><td>125</td></tr>
<tr><td>118</td><td>158</td><td>128</td></tr>
<tr><td>122</td><td>162</td><td>132</td></tr>
</table></td><td>15</td><td>CO4</td></tr>
</table>