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MBA
(SEM I) THEORY EXAMINATION 2024-25
BUSINESS STATISTICS AND ANALYTICS

TIME: 3 HRS

M.MARKS: 70

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1. Attempt all questions in brief. 2 x 07 = 14

Q no.	Question	CO	Level
a.	What is the significance of skewness and kurtosis in data analysis?	1	K2
b.	Write The Difference Between Descriptive And Inferential statistics.	1	K2
c.	Define type I and Type II error.	5	K4
d.	In given data find the standard deviation of the following data. 2,6,3,5,4	2	K4
e.	A card is drawn from a well shuffled pack of playing cards. find the probability- neither a spade nor a king	4	K4
f.	Comment on the following for a Poisson distribution. Mean=3,variance=7	4	K4
g.	Define additive and multiplicative model of time series analysis.	2	K1

SECTION B

2. Attempt any three of the following: 07 x 3 = 21

a.	What is time series? Explain various component of a time series.	2	K1																						
b.	Calculate the standard deviation for the following data. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Age in years</th> <th>44-46</th> <th>46-48</th> <th>48-50</th> <th>50-52</th> <th>52-54</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>No.of students</td> <td>3</td> <td>24</td> <td>27</td> <td>21</td> <td>5</td> <td>80</td> </tr> </tbody> </table>	Age in years	44-46	46-48	48-50	50-52	52-54	Total	No.of students	3	24	27	21	5	80	1	K2								
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No.of students	3	24	27	21	5	80																			
c.	What is the major purpose of hypothesis testing? Explain the various steps involved in hypothesis testing.	5	K5																						
d.	Calculate Karl Pearson's coefficient of correlation from the following data. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>X</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> <th>9</th> <th>10</th> </tr> </thead> <tbody> <tr> <td>Y</td> <td>46</td> <td>42</td> <td>38</td> <td>34</td> <td>30</td> <td>26</td> <td>22</td> <td>18</td> <td>14</td> <td>10</td> </tr> </tbody> </table>	X	1	2	3	4	5	6	7	8	9	10	Y	46	42	38	34	30	26	22	18	14	10	3	K4
X	1	2	3	4	5	6	7	8	9	10															
Y	46	42	38	34	30	26	22	18	14	10															
e.	Define binomial distribution. Six coins are tossed in succession. find the probability of getting more than 4 heads.	4	K4																						

SECTION C

3. Attempt any one part of the following: 07 x 1 = 07

a.	"Statistics plays an important role not only in the study of economics and commerce, but also in managerial decision making". Explain.	1	K2																
b.	Fit by the method of least square. ($y=a+bt+ct^2$), A parabolic curve to the following data. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Year (t)</th> <th>1971</th> <th>1972</th> <th>1973</th> <th>1974</th> <th>1975</th> <th>1976</th> <th>1977</th> </tr> </thead> <tbody> <tr> <td>production</td> <td>23</td> <td>20</td> <td>18</td> <td>18</td> <td>14</td> <td>13</td> <td>13</td> </tr> </tbody> </table>	Year (t)	1971	1972	1973	1974	1975	1976	1977	production	23	20	18	18	14	13	13	2	K2
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4. Attempt any one part of the following: 07 x 1 = 07

a.	Explain the concept of Fischer's Z test. Discuss the application of Fischer's Ztest	5	K5
b.	Suppose the probability that a particular student will get a first division in the annual examination is 1/10. Suppose he appeared in 10 class test and obtained first division in four or them. What is the probability now that the first division in the annual examination?	4	K4

5. Attempt any one part of the following: 07 x 1 = 07

a.	What is index number? Discuss its utility.	2	K1																		
b.	Calculate the coefficient of correlation by Spearman's Rank method.	3	K4																		
<table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="width: 5%;">X</td> <td style="width: 10%;">75</td> <td style="width: 10%;">88</td> <td style="width: 10%;">95</td> <td style="width: 10%;">70</td> <td style="width: 10%;">60</td> <td style="width: 10%;">80</td> <td style="width: 10%;">81</td> <td style="width: 10%;">50</td> </tr> <tr> <td>Y</td> <td>120</td> <td>134</td> <td>150</td> <td>115</td> <td>110</td> <td>140</td> <td>142</td> <td>100</td> </tr> </table>				X	75	88	95	70	60	80	81	50	Y	120	134	150	115	110	140	142	100
X	75	88	95	70	60	80	81	50													
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6. Attempt any one part of the following: 07 x 1 = 07

a.	Define regression. Find the regression equation from the following data. $\sum X=60, \sum Y=40, \sum XY=1150, \sum X^2=4160, \sum Y^2=1720, N=10$	3	K4
b.	What is the concept of business analytics? Discuss its significance in industry. https://www.aktuonline.com	5	K4

7. Attempt any one part of the following: 07 x 1 = 07

a.	Calculate the median and mode of the given data.	1	K4																														
<table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="width: 10%;">Marks</td> <td style="width: 10%;">10-20</td> <td style="width: 10%;">20-30</td> <td style="width: 10%;">30-40</td> <td style="width: 10%;">40-50</td> <td style="width: 10%;">50-60</td> <td style="width: 10%;">60-70</td> </tr> <tr> <td>No. Of students</td> <td>5</td> <td>8</td> <td>12</td> <td>16</td> <td>10</td> <td>8</td> </tr> </table>				Marks	10-20	20-30	30-40	40-50	50-60	60-70	No. Of students	5	8	12	16	10	8																
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b.	<p>The following data relate to the prices and quantities of the four commodities in the year 2000 and 2003. Construct the following index number of price for the year 2003 by using 2000 as the base year.</p> <p>a) Laspeyres index b) Paasches index c) Fisher ideal index</p> <table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td></td> <td colspan="2" style="text-align: center;">2000</td> <td colspan="2" style="text-align: center;">2003</td> </tr> <tr> <td style="text-align: center;">Commodity</td> <td style="text-align: center;">Price</td> <td style="text-align: center;">quantity</td> <td style="text-align: center;">price</td> <td style="text-align: center;">quantity</td> </tr> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">5</td> <td style="text-align: center;">100</td> <td style="text-align: center;">6</td> <td style="text-align: center;">150</td> </tr> <tr> <td style="text-align: center;">B</td> <td style="text-align: center;">4</td> <td style="text-align: center;">80</td> <td style="text-align: center;">5</td> <td style="text-align: center;">100</td> </tr> <tr> <td style="text-align: center;">C</td> <td style="text-align: center;">2.5</td> <td style="text-align: center;">60</td> <td style="text-align: center;">5</td> <td style="text-align: center;">72</td> </tr> <tr> <td style="text-align: center;">D</td> <td style="text-align: center;">12</td> <td style="text-align: center;">30</td> <td style="text-align: center;">9</td> <td style="text-align: center;">33</td> </tr> </table>		2000		2003		Commodity	Price	quantity	price	quantity	A	5	100	6	150	B	4	80	5	100	C	2.5	60	5	72	D	12	30	9	33	2	K4
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