

MID-TERM EXAMINATION
(Course Name : MBA) (Semester: I)
(October, 2023) OFF LINE mode

Subject Code: MMS-107	Subject: Decision Sciences
Time : 1 ½ Hours	Maximum Marks : 30
Note: Q. 1 is compulsory.	

Q1	Define the following-	(2.5*4)																	
	(a) Statistics and role of statistics in management																		
	(b) Measure of Central Tendency with real life applications																		
	(c) Types of data on the basis of level of measurement																		
	(d) Dispersion and the characteristics for an ideal measure of dispersion																		
Q2	(Attempt any Two Parts) UNIT-1	(5,5)																	
	<p>(a) Suppose, you make a 2 years investment of \$1000 and it grows to \$2000 during the 1st year, during the 2nd year. However, the investment suffers a loss and becomes \$1000. Calculate the average growth rate of return using (a) AM (b) GM and (c) HM</p> <p>(b) The following table show data collected for the weekly food expenditure.</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Expenditure on Food</th> <th style="text-align: center;">No. of respondent</th> </tr> </thead> <tbody> <tr><td>Less than 5 Euro</td><td style="text-align: center;">2</td></tr> <tr><td>Less than 10 Euro</td><td style="text-align: center;">10</td></tr> <tr><td>Less than 15 Euro</td><td style="text-align: center;">21</td></tr> <tr><td>Less than 20 Euro</td><td style="text-align: center;">36</td></tr> <tr><td>Less than 30 Euro</td><td style="text-align: center;">48</td></tr> <tr><td>Less than 40 Euro</td><td style="text-align: center;">54</td></tr> <tr><td>40 Euro or more</td><td style="text-align: center;">57</td></tr> </tbody> </table> <p>Obtain the Mean, Median, Mode and Interquartile range also interpret the results.</p>			Expenditure on Food	No. of respondent	Less than 5 Euro	2	Less than 10 Euro	10	Less than 15 Euro	21	Less than 20 Euro	36	Less than 30 Euro	48	Less than 40 Euro	54	40 Euro or more	57
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	<p>(c) Define, difference between the measures of dispersion and coefficient of variation. Scores of two golfers for 13 rounds were as follows:</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <tr> <td style="width: 15%; text-align: center;">Golfer A</td> <td>74, 75, 78, 72, 77, 79, 78, 81, 76, 72, 72, 77, 74</td> </tr> <tr> <td style="text-align: center;">Golfer B</td> <td>86, 84, 80, 88, 89, 85, 86, 82, 82, 79, 86, 80, 82</td> </tr> </table> <p>Find which golfer may be considered to be more consistent player?</p>			Golfer A	74, 75, 78, 72, 77, 79, 78, 81, 76, 72, 72, 77, 74	Golfer B	86, 84, 80, 88, 89, 85, 86, 82, 82, 79, 86, 80, 82												
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Q3	(Attempt any Two Parts) UNIT-2	(5,5)																	
	<p>(a) Suppose we have the following joint probabilities</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">A₁</th> <th style="text-align: center;">A₂</th> <th style="text-align: center;">A₃</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">B₁</td> <td style="text-align: center;">0.1</td> <td style="text-align: center;">0.3</td> <td style="text-align: center;">0.2</td> </tr> <tr> <td style="text-align: center;">B₂</td> <td style="text-align: center;">0.2</td> <td style="text-align: center;">0.1</td> <td style="text-align: center;">0.1</td> </tr> </tbody> </table>				A ₁	A ₂	A ₃	B ₁	0.1	0.3	0.2	B ₂	0.2	0.1	0.1				
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(i.) Calculate the marginal probabilities.

(ii.) Calculate $P(A_1 | B_1)$.

(iii.) Calculate $P(A_2 | B_1)$.

(iv.) Calculate $P(A_3 | B_1)$.

(b) (Tossing a six-sided die) The number of spots turning up when a six-sided die is tossed is observed. Consider the following events:

A: The number observed is an even number.

B: The number observed is greater than 4.

C: The number observed is less than 4.

D: The number observed is 4.

(i.) Define a sample space for this random experiment, and assign probabilities to the outcomes.

(ii.) Find $P(A)$, $P(B)$, $P(C)$ and $P(D)$.

(iii.) Find $P(\bar{A})$

(iv.) Find $P(A \cap B)$

(c) A tool and die maker operate out of a small shop making specialized tools. He is considering increasing the size of his business and needs to know more about his costs. One such cost is electricity, which he needs to operate his machines and lights. (Some jobs require that he turn on extra-bright lights to illuminate his work.) He keeps track of his daily electricity costs and the number of tools he made that day. These data are listed below. Determine the fixed and variable costs of electricity

Day	1	2	3	4	5	6	7	8	9	10
No. of Tools	7	3	2	5	8	11	5	15	3	6
Electricity cost (\$)	23.8	11.89	15.98	26.11	31.79	39.93	12.27	40.06	21.38	18.65