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Subject Code:- AMBA0103 Roll. No: NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA (An Autonomous Institute) Affiliated to Dr. A.P.J. Abdul Kalam Technical University, Uttar Pradesh, Lucknow MBA SEM: I - THEORY EXAMINATION (2021 - 2022) Subject: Introduction to Business Analytics Time: 03:00 Hours Max. Marks: 100 General Instructions: 1. All questions are compulsory. It comprises of three Sections A, B and C. Section A - Question No- 1 is objective type question carrying 1 mark each & Question No- 2 is very short type questions carrying 2 marks each. • Section B - Question No- 3 is Long answer type - I questions carrying 6 marks each. • Section C - Question No- 4 to 8 are Long answer type - II questions carrying 10 marks each. • No sheet should be left blank. Any written material after a Blank sheet will not be evaluated/checked. SECTION A 20 1. Attempt all parts:-1-a. If a frequency distribution is positively skewed, the mean of the distribution is (CO1) 1 1. Greater than the mode 2. Less than the mode 3. Equal to mode 4. Less than mean 1-b. Find the mode of the following distribution: 7,4,3,5,6,3,3,2,4,3,4,3,3,4,4,2,3 (CO1) 1 1.7 2.6 3.5 4.3

Karl Pearson's coefficient of correlation is defined by 1-c. (CO2)

 $r(x_{\mathcal{Y}}) = \frac{n \sum xy - \sum x \sum y}{\sqrt{n \sum x^2 - (\sum x)^2} \sqrt{n \sum y^2 - (\sum y)^2}}$

(CO2)

 $r_{xy} = \frac{\sum (x_i - \overline{x})(y_i - \overline{y})}{\sqrt{\sum (x_i - \overline{x})^2 \sum (y_i - \overline{y})^2}}$

 $r_{xy} = \frac{\sum (x_i - \overline{x}) \sum (y_i - \overline{y})}{n\sigma_x \sigma_y}$

1

1

All of the above

1-d. Which statement is true:

> 1. Correlation coefficient is the geometric mean between the regression coefficients. 2. If one of the regression coefficients is greater than unity, the other must be less than unity.

3. Arithmetic mean of regression coefficient is greater than the Correlation

coefficient.

4. All of the above A and B are two events such that P(A)=0.4 and P(A \cap B) = 0.2, then $P(A \cap \overline{B})$ is 1 1-e. equal to (CO3) 1.0.4 2.0.2 3.0.6 4.0.8 1-f. What is the probability of an impossible event? 1 (CO3) 1.0 2.1 3. Not defined 4. Insufficient data Which of the following is component of the time series modeling? 1 1-g. (CO4) 1. Seasonality 2. Minimax 3. Maximax 4. None of the above Formula for Fisher's Method is _____ 1-h. (CO4) 1 $\sum p_{01} = \frac{\sum p_0 q_0}{\sum p_1 p_0} \times 100$ 1. 2. $\sum p_{01} = \frac{\sum p_1 q_1}{\sum p_0 q_1} \times 100$ $\sum_{n=1}^{\infty} p_{01} = \frac{\sum_{n=1}^{n} p_{1}}{\sum_{n=1}^{n} p_{n}} \times 100$ $\sum p_{01} = \sqrt{\frac{\sum p_1 q_0}{\sum p_0 q_0} \times \frac{\sum p_1 q_1}{\sum p_0 q_1}} \times 100$ 1-i. A type of decision-making environment is 1 (CO5) 1. certainty 2. uncertainty 3. risk 4. all of these 1 1-j. Decision Nodes are represented by _____ (CO5) 1. Disks 2. Squares 3. Circles 4. Triangles 2. Attempt all parts:-2.a. Define Range and Inter quartile range. (CO1) 2 Prove that Arithmetic mean of regression coefficient is greater than the Correlation 2.b. 2 coefficient. (CO2) 2 2.c. What are the four properties that must be present in order to use the Binomial

	distribution?	(CO3)									
2.d.	Define Time F	{eversal	Test.	(CO4)							
2.e.	Define Machir	ne Learni	ing.	(CO5)							
			Ū	SECTI	ION B						30
3. Answ	er any five of the	e followin	a:-								
3-а.	Define statistics. Explain the importance of statistics with reference to business and								d		
<u>.</u>	industry. (CO1) Calculate the mean deviation from mean for the following data: (CO1)										
3-b.	Calculate the mean deviatio		viation			<u> </u>		<u>/</u>	<u>)</u> 8-10		
	frequency	3		4-0	,	2			1		-
3-c.		-	n ara	•			_	$1x \pm 5y$	3 - 0 3	and var(v	」 ひ
0-0.	Two lines of regression are given by $7x - 16y + 9 = 0$ and $-4x + 5y - 3 = 0$ and $= 16$. Calculate - (i) The mean of x and y (ii) The correlation coefficient. (CO2)									.)	
3-d.	Calculate coe	fficient of	i rank o	correlation	n from	the follow	wing dat	:a:- (C	CO2)		
	Marks										7
	in Accou 48	33	40	9	18	14	67	24	19	65	
	nt Marks										_
	lin	10			45		20			10	
	Statisti cs	13	29	6	15	4	20	9	5	19	
3.e.	State and pro	ve Bay's	theore	. (C	O3)		•				_
3.f.	Fit a linear trend to the following data by the least squares method: (CO4)										
•	Year	1990		1992		1994	19		199	8	٦
	production	18		21	2	23	27		16		
3.g.	Explain Decision Tree and its applications in business. (CO5)								_		
- 3	1				CTION		()				5
4 Answ	ver any <u>one</u> of the	e followir	na	-							
4-a.	-		-	ation if th		ios of two	n hatem	on A 8	R in te	n inning	
4-a.	Find the Coefficient of Variation if the scores of two batsmen A & B in ten inning during a certain match are: (CO1)								c 1		
		in match		2011							s 1
		in match 28	47	63	71	39	10	60	96	14	s 1 7
	during a certa		· ·	/	71 67	39 90	10	60 62	96 40	14 80	s 1]
4-b.	during a certa A 32 B 19 Calculate the	28 31 first four	47 48 r mom	63 53 ents abou	67	90	10	62	40	80	
4-b.	during a certaA32B19Calculate the find skewnes x 10	28 31 first four s and ku	47 48 r mom	63 53 ents abou	67 ut mea	90	10	62	40 oution a	80	
4-b.	during a certaA32B19Calculate thefind skewnesx10	28 31 first four s and ku	47 48 r mome rtosis :	63 53 ents abou (CO1)	67 ut mea	90 an of the	10 followin	62 ng distril	40 Dution a	80 Ind hence	
	during a certaA32B19Calculate thefind skewnesx10f	28 31 first four s and ku 0 – 20 1	47 48 r mome rtosis : 20-30 20	63 53 ents abou (CO1) 30-40	67 ut mea	90 an of the 40-50	10 followin 50-60	62 ng distril 60-	40 Dution a	80 and hence 70-80	
	during a certaA32B19Calculate the find skewnes x 10	28 31 first four s and ku 0 – 20 1	47 48 r mome rtosis : 20-30 20	63 53 ents abou (CO1) 30-40	67 ut mea	90 an of the 40-50	10 followin 50-60	62 ng distril 60-	40 Dution a	80 and hence 70-80	
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5. Answ	during a certa A 32 B 19 Calculate the find skewnes x 10 f ver any <u>one</u> of the Calculate the X	28 31 first four s and kur 0 - 20 1 e followin two regree 6	47 48 r mome rtosis : 20-30 20	63 53 ents abou (CO1) 30-40 69 equations	67 ut mea 0 4 s from	90 an of the 40-50 108 the follov 10	10 followir 50-60 78 wing dat	62 ng distril 60- 22	40 bution a 70 ¹ 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	80 and hence 70-80	e 1
5. Answ 5-a.	during a certa A 32 B 19 Calculate the find skewnes x 10 f ver any <u>one</u> of the Calculate the X Y	28 31 first four s and kur) – 20 1 two regree 6 9	47 48 r mome rtosis : 20-30 20 ng:- ession	63 53 ents abou (CO1) 30-4(69 equation: 2 11	67 ut mea 0 4 s from	90 an of the 40-50 108 the follov 10 5	10 followir 50-60 78 wing dat 4 8	62 ng distril 60- 22 a: - (CC	40 bution a 70 7 2 8 70 2 2 2 7	80 Ind hence 70-80 2	e 1
5. Answ	during a certa A 32 B 19 Calculate the find skewnes x 10 f ver any <u>one</u> of the Calculate the X	28 31 first four s and kur 0 - 20 1 e followin two regree 6 9 price and	47 48 r mome rtosis : 20-30 20 ng:- ession	63 53 ents abou (CO1) 30-4(69 equation: 2 11	67 ut mea 0 4 s from	90 an of the 40-50 108 the follov 10 5	10 followir 50-60 78 wing dat 4 8	62 ng distril 60- 22 a: - (CC	40 bution a 70 7 2 8 70 2 2 2 7	80 Ind hence 70-80 2	e 1
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5. Answ 5-a.	during a certa A 32 B 19 Calculate the find skewnes x 10 f ver any <u>one</u> of the Calculate the X Y The data on given below: (Month	2831first four s and kur> - 201e followin two regree69price and (CO2)January 1010	47 48 r mome rtosis : 20-30 20 ng:- ession d quar	63 53 ents abou (CO1) 30-4(69 equations 2 11 ntity purch February 10 6	67 ut mea 0 4 5 5 5 7 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7	90 an of the 40-50 108 the follov 10 5 relating March 11 4	10 followir 50-60 78 wing dat 4 8 to a col Ap 12 3	62 ng distril 60- 22 ca: - (CC mmodity	40 2000 a 70 70 70 7 7 7 7 7 7 7 7 7 7 7 7 7	80 10 hence 70-80 2 months is /	e 1

- 6. Answer any one of the following:-
- 6-a. State and prove the theorem of additional probability. A bag contains 7 white, 6 red 10 and 5 black balls . Two balls are drawn at random. Find the probability that they will both be white. (CO3)
- 6-b. At a parking place the average number of car-arrivals during a specified period of 15 10 minutes is 2. If the arrival process is well described by a Poisson process, find the probability that during a given period of 15 minutes
 - i. no car will arriveii. at least two cars will arriveiii. at most three cars will arriveiv. between 1 and 3 cars will arrive (CO3)

7. Answer any one of the following:-

- 7-a. What is Fisher's ideal formula for preparing index number? Does it satisfy the time 10 reversal test and factor reversal test? Explain. (CO4)
- 7-b. Compute the Laspeyre's, Pasche's, Fisher's and Marshall-Edgeworth's index number 10 from the following data- (CO4)

Item	1880		1889			
Item	Price	Quantity	Price	Quantity		
A	15	22	16	30		
В	13	18	4	11		
С	3	10	5	20		
D	11	4	3	7		

8. Answer any one of the following:-

- 8-a. What are the characteristics of decision under certainty, uncertainty and risk? (CO5) 10
- 8-b. What is AI and what is the use of AI in business? (CO5)

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