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Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

MBA

SEM: I - CARRY OVER THEORY EXAMINATION - AUGUST 2022

Subject: Introduction to Business Analytics

Time: 3 Hours Max. Marks: 100

General Instructions:

1. The question paper comprises three sections, A, B, and C. You are expected to answer them as directed.
2. Section A - Question No- 1 is 1 marker & Question No- 2 carries 2 marks each.
3. Section B - Question No-3 is based on external choice carrying 6 marks each.
4. Section C - Questions No. 4-8 are within unit choice questions carrying 10 marks each.
5. 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. The algebraic sum of the deviations from mean is: (CO1) 1

(a) Maximum

(b) Minimum

(c) Zero

(d) None of the above

1-b. The coefficient of variation is 68%. The standard deviation is 21.1. what is the arithmetic mean? (CO1) 1

(a) 31.1764

(b) 36.55

(c) 30

(d) None of above

1-c. Which of the following are true? (CO2) 1

(a) The value of correlation coefficient is lies between -1 to 1.

(b) Correlation coefficient is dependent of change of origin & scale.

(c) The value of Correlation coefficient is always positive.

(d) None of these

1-d. The linear Regression plane of x on y *and* z is (CO2) 1

(a) $x=a+by+cz^2$

(b) $x=a+byz+cz^2$

(c) $x=a+by+cz$

(d) $x=a+by^2+cz$

1-e. What is the probability of an impossible event? (CO3) 1

(a) 0

(b) 1

(c) Not defined

(d) Insufficient data

1-f. Two unbiased coins are tossed. What is the probability of getting at most one head? (CO3) 1

(a) 1/2

(b) 1/3

(c) 1/6

(d) 3/4

1-g. Dorbish and Bowleye's Formula is used to calculate (CO4) 1

(a) Mean

(b) Simple Aggregation

(c) Index Number

(d) Time series

1-h. Prosperity, Recession and Depression in a business is a example of (CO4) 1

(a) Seasonality

(b) Cyclical

(c) Irregular variation

(d) None of the above

1-i. The expected value of perfect information (EVPI) is (CO5) 1

(a) equal to expected regret of the optimal decision under risk

(b) the utility of additional information

(c) maximum expected opportunity loss

(d) none of the above

1-j. Chance Nodes are represented by _____ (CO5) 1

(a) Disks

(b) Squares

(c) Circles

(d) Triangles

2. Attempt all parts:-

2.a. The arithmetic mean of 150 observations was found out to be 80.5. At the time of calculation, one observation was wrongly recorded as 850 instead of 85. Calculate the correct mean. (CO1) 2

2.b. Prove that the correlation coefficient and the two regression coefficient have same sign. (CO2) 2

2.c. Find the probability that a card selected at random from a deck is an ace or a queen. (CO3) 2

2.d. What is Time Reversal Test? (CO4) 2

2.e. Explain Minimax and Maximin principle of decision making. (CO5) 2

SECTION B 30

3. Answer any five of the following:-

3-a. What are the differences among the mean, median and mode.? Also write down the merits and demerits of each. (CO1) 6

3-b. Calculate the mean deviation from median for the following data: (CO1) 6

Class Interval	10-20	20-30	30-40	40-50	50-60
frequency	15	20	45	15	5

3-c. Find rank correlation coefficient from following data. (CO2) 6

Advertise cost	40	64	61	90	82	72	25	98	36	78
sales	48	52	57	85	62	67	60	90	51	83

3-d. Explain regression and its properties. (CO2) 6

3.e. What is Normal Distribution? Discuss the characteristics of Normal Distribution. (CO3) 6

3.f. Fit a straight line trend by the method of least square (taking 1978 as year of origin) to the following data: (CO4) 6

Year	1979	1980	1981	1982	1983	1984
Production	5	7	9	10	12	17

3.g. Explain decision under risk, certainty and uncertainty. (CO5) 6

SECTION C 50

4. Answer any one of the following:-

4-a. Find the Standard Deviation of the following data: - (CO1) 10

Age(in Year's)	4-6	6-8	8-10	10-12	12-14	14-16	16-18
No.of students	30	90	120	150	80	60	20

4-b. Find measure of skewness and kurtosis on the basis of moments for the following distribution : (CO1) 10

Marks	5-15	15-25	25-35	35-45	45-55
No. of Students	1	3	5	7	4

5. Answer any one of the following:-

5-a. Calculate the two regression equations from the following data: - (CO2) 10

X	6	2	10	4	8
Y	9	11	5	8	7

5-b. You are given following information about expenditure and sale (CO2) 10

	Advertisement (in Lakhs)	Sale (in Lakhs)
Arithmetic mean	12	100
Standard Deviation	4	11

Correlation coefficient is 0.8 then calculate

i. Two regression equation
ii. Find likely sale when advertisement budget is Rs.15 Lakhs
iii. What should be the advertisement budget when company wants to attain the target of Rs. 120 Lakhs.

6. Answer any one of the following:-

6-a. As a result of a certain experiment, the data obtained were: (CO3) 10

X	0	1	2	3	4
f	8	32	34	24	5

Fit a Poisson distribution to the above data.

6-b. What is meant by theoretical distribution? Define binomial distribution and its assumptions. Give two examples of binomial distribution. (CO3) 10

7. Answer any one of the following:-

7-a. What is time series? Explain the various components of the time series. Also give the importance of time series. (CO4) 10

7-b. Compute the Laspeyre's, Pasche's, Fisher's and Marshall-Edgeworth's index number from the following data- (CO4) 10

Item	1818		1819	
	Price	Quantity	Price	Quantity
A	15	12	7	30
B	13	14	8	11
C	13	10	5	20
D	10	4	3	17

8. Answer any one of the following:-

8-a. What is decision tree? Explain the decision tree with the help of any example. (CO5) 10

8-b. What is Machine learning ? Explain its application in business. (CO5) 10