Printed page:03 **Subject Code: AMBA0103**

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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

MASTER OF BISINESS ADMINISTRATION (MBA)

(SEM: I Theory Examination (2020-2021)

SUBJECT: INTRODUCTION TO BUSINESS ANALYTICS

Time: 3 Hours **Max. Marks:100**

General Instructions:

- All questions are compulsory. Answers should be brief and to the point.
- This Question paper consists of 03 pages & 8 questions.
- It comprises of three Sections, A, B, and C. You are to attempt all the sections.
- Section A -Question No- 1 is objective type questions carrying 1 mark each, Question No- 2 is very short answer type carrying 2 mark each. You are expected to answer them as directed.
- Section B - Question No-3 is Long answer type -I question with external choice carrying 6 marks each.You need to attempt any five out of seven questions given.
- Section C - Question No. 4-8 are Long answer type –II (within unit choice) questions carrying 10 marks each. You need to attempt any one part *a* or *b.*
- Students are instructed to cross the blank sheets before handing over the answer sheet to the invigilator.
- No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION – A

1.	**Attempt all the parts.**		**[10×1=10]**	**CO**
	a.	Choose the right answer: The range of a sample gives an indication of the : (A) Way in which the values cluster about a particular point (B) Number of observations bearing the same value (C) Maximum variation in the sample (D) Degree to which the mean value differs from its expected value.	**(1)**	**CO1**
	b.	The observation which occurs most frequently in a sample is the (A) median (B) mean deviation (C) standard deviation (D) mode	**(1)**	**CO1**
	c.	.....attempts to determine the degree of relationship between Variables. a. Regression analysis b. Correlation analysis c. Inferential analysis d. None of these	**(1)**	**CO2**
	d.	Karl Pearson's correlation coefficient if denoted by the symbol ..... a. K b. r c. R d. None of these	**(1)**	**CO2**

e.	Whether the statement is true or false: Normal distributions are symmetric, unimodal, and asymptotic, and the mean, median, and mode are all equal	**(1)**	**CO3**
f.	The binomial is a type of distribution that has ____ possible outcomes	**(1)**	**CO3**
g.	A ____ is a sequence of numerical data points in successive order.	**(1)**	**CO4**
h.	Index numbers are expressed in terms of_____	**(1)**	**CO4**
i.	When these probabilities are known or can be estimated, the choice of an optimal action, based on these probabilities, is termed as ----------	**(1)**	**CO5**
j.	An ____ is the piece of a computing system designed to simulate the way the human brain analyses and processes information.	**(1)**	**CO5**

2. Attempt all the parts. **[5×2=10]** **CO**

a. Given the following information, find the population variance. **(2)** **CO1**

Measure	Value
μ	50
σ	4

b.	Is there any relationship between Regression and Correlation? State your opinions briefly	**(2)**	**CO2**
c.	Explain briefly the Bayes' theorem	**(2)**	**CO3**
d.	Why least squares method is used?	**(2)**	**CO4**
e.	What is main application of Decision tree approach	**(2)**	**CO5**

SECTION – B

CO

3. Answer any five of the following- **[5×6=30]**

a. Calculate variance and standard deviation for the following data: **(6)** **CO1**

x	2	4	6	8	10
f	3	5	9	5	3

b. When Rank Method of correlation is used. Explain formula with giving example. **(6)** **CO2**

c. What is Poisson's distribution? Write a formula for probability function of Poisson's distributions. **(6)** **CO3**

d. A company had the following net sales and operating income for each of the past five years (in millions): **(6)** **CO4**

	2019	**2018**	**2017**	**2016**	**2015**
Net sales	$35,119	$30,990	$31,944	$28,857	$24,088
Operating income	$ 8,449	$ 8,231	$ 8,446	$ 7,252	$ 6,308

Assuming 2015 is the base year, find out trend percentage.

e.	Explain main application of AI and machine learning in business decisions.	**(6)**	**CO5**
f.	Compare skewness and kurtosis with an example.	**(6)**	**CO1**
g.	What is the probability of drawing either a king or a queen in a single draw from a well shuffled pack of 52 cards?	**(6)**	**CO3**

SECTION – C

4 **Answer any one of the following-** **[5×10=50]** **CO**

a. A student has gotten the following grades on his tests: 87, 95, 76, and 88. He wants an 85 or better overall. What is the minimum grade he must get on the last test in order to achieve that average? **(10)** **CO1**

b. Find out missing frequencies in the following incomplete distribution: **(10)** **CO1**

Class Interval	0-10	10-20	20-30	30-40	40-50
Frequency	3	_	20	12	_

The value of median and mode are 27 and 26 respectively.

5. **Answer any one of the following-**

a. The values of y and their corresponding values of y are shown in the table below **(10)** **CO2**

x	0	1	2	3
y	2	3	5	4

i) Find the least square regression line $y = a x + b$.
ii) Estimate the value of y when $x = 10$.

b. Calculate Karl Pearson's coefficient of correlation from the following data- **(10)** **CO2**

X	18	20	21	22	27	27	28	29	29	29
Y	23	37	29	28	28	31	35	30	36	33

6. **Answer any one of the following-**

a. A card is drawn from a pack of 52 cards. Find the probability of getting a king or a heart or a red card. **(10)** **CO3**

b. Prove that statement: The probability of simultaneous occurrence of two events is equal to the probability of one of the events multiplied by the conditional probability of the other, i.e. for two events A & B, $P(A \cap B)=P(A)\times P(B/A)$. **(10)** **CO3**

7. **Answer any one of the following-**

a. Explain Quantity index by fisher's method? Why this method is called Ideal**?** **(10)** **CO4**

b. Calculate the index numbers from the following data using: **(10)** **CO4**
(i) Laspeyre's method,
(ii) Paasche's method,
(iii) Fisher's ideal method:

Commodity	**Base year**		**Current year**	
	Price p0	**Quantity q0**	**Price p1**	**Quantity q1**
A	8	100	10	120
B	4	60	5	80
C	10	20	12	25
D	12	25	15	30
E	3	5	4	6

8. **Answer any one of the following-**

a. Explain Artificial Neural Networks and deep learning in detail. **(10)** **CO5**

b. Explain with imaginary data Decision-making under certainty, uncertainty and risk situations. **(10)** **CO5**