(8 pages)

Reg. No. :

Code No.: 5653 Sub. Code : ZBAM 14

M.B.A. (CBCS) DEGREE EXAMINATION, NOVEMBER 2021

First Semester

Business Administration – Core

## QUANTITATIVE TECHNIQUES

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A —  $(10 \times 1 = 10 \text{ marks})$ 

Answer ALL questions.

Choose the correct answer :

1. A \_\_\_\_\_\_ is a rule which assigns to each element of a set A a unique element in the set B.

- (a) function (b) set
- (c) sequence (d) series

2.	The number of rows and columns that are present in a matrix is calledof the matrix.					
	(a) degree	(b) power				
	(c) cycle	(d) size				
3.	Rectangles are used fo ————————————————————————————————————	r representing the data in				
	(a) curve	(b) circle				
	(c) bar	(d) pie				
4.	The probability that is assigned to an event when it is known that another event B has alrea occurred is called the ——— probability of					
	(a) conditional	(b) independent				
	(c) dependent	(d) null				
5.	The mean of the	Poisson distribution is				
	(a) <i>npq</i>	(b) <i>np</i>				
	(c) $\sqrt{npq}$	(d) 1- <i>p</i>				
6.	The hypothesis is true but our test reject then called error.					
	(a) Type I	(b) Type II				
	(c) Type III	(d) Type IV				

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- 7. The technique of testing the significance of the difference of two or more means is called
  - (a) ANOVA
  - (b) correlation

\_\_\_\_\_.

- (c) test of significance
- (d) none
- 8. The change in two variables in opposite direction is called \_\_\_\_\_.
  - (a) positive correlation
  - (b) negative correlation
  - (c) significance
  - (d) both (a) and (b)
- 9. The quantitative method used to determine patterns in data collected over time is called
  - (a) probability
  - (b) index
  - (c) time series
  - (d) data collection
- 10. The <u>index</u> measures change in total monetary worth.
  - (a) value (b) under
  - (c) index (d) time series Page 3 **Code No.: 5653**

PART B —  $(5 \times 5 = 25 \text{ marks})$ 

Answer ALL questions, choosing either (a) or (b).

11. (a) State four types of matrix with example.

Or

- (b) Find the points or maxima and minima of the function  $y = x^3 3x^2 + 5$ .
- (a) Determine the probability of drawing either an ace or a heart in a well shuffled deck of playing cards.

Or

- (b) A bag contains 4 white, 3 blue and 5 red balls. Two balls are drawn then what is the probability that at least one of them is white.
- 13. (a) Write about Type I and Type II error.

Or

- (b) The mean of a binomial distribution is 4 and s.d is √3 then calculate n, p and q.
- 14. (a) Use ANOVA to test whether there is significance between the three sample means

Sample I 6 7 3 8 Sample II 5 5 3 7 Sample III 5 4 3 4 Or

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[P.T.O.]

(b) Calculate the coefficient of correlation between two firms A and B from the following sales in thousands of rupees per week.

А	1	<b>5</b>	8	3	9	10
В	3	8	10	4	12	11

15. (a) Write about four kinds of variation in time series.

Or

(b) Write about types of index numbers.

PART C —  $(5 \times 8 = 40 \text{ marks})$ 

Answer ALL questions, choosing either (a) or (b)

- 16. (a) (i) Find the average and marginal cost functions from the total cost function  $C = 60 + 10x + 15x^2$ 
  - (ii) For the demand function  $p = 550 3x 6x^2$  where x is the quantity demanded and p is the price per unit, find the average revenue and marginal revenue.

Or

- (b) Find the inverse of the matrix  $\begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & -3 \\ 2 & -1 & 3 \end{bmatrix}$ .
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17. (a) Find the variance for the data*x* : 10, 15, 25, 30, 40

## Or

(b) Assume that we have one box containing 10 balls distributed as follows:

Three are coloured and dotted.

One is coloured and striped.

Two are Gray and dotted.

Four are Gray and striped. Suppose someone draws a coloured ball from the box, what is the probability that it is dotted? What is the probability it is striped?

18. (a) The average commission charged by a brokerage firm on a sale of common stocks is ₹ 144 and the standard deviation is ₹ 52. Doshi has taken a random sample of 121 clients and determined that they paid an average commission of ₹ 151. At a 5% significance level can doshi conclude that his clients commission are higher than the industry average?

Or

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- (b) In a bank the saving accounts have an average balance of ₹ 120 and standard deviation of ₹ 40. Assuming that the account balances are normally distributed what proportion of the account is over ₹ 150? What proportion of the accounts is between ₹ 100 and ₹150? What proportion of the accounts is between ₹ 60 and ₹90?
- (a) Calculate the rank correlation coefficient for the following data of ranks of two tests given to the candidates for Maths and Statistics for Managers.

Test I	92	89	87	86	83	77	71	63	53	50
Test II	86	83	91	77	68	85	52	82	37	57

Or

(b) The following data relate to marks obtained by 250 students in Maths and Science. The coefficient of correlation between marks in the subjects is +.8 Find the two regression equation and estimate the marks obtained by a student in Science who secured 50 marks in Maths

Subject	Average	s.d
Maths	48	4
Science	55	<b>5</b>

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- 20. (a) Calculate the index numbers keeping 1980 as base year: Year 1980 1985 1990 1995 Number 9.3 6.5 9.6 10.1 Or
  - (b) Explain cyclical variation with suitable example.

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