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MASTER OF BUSINESS ADMINISTRATION (CBCS)
DEGREE EXAMINATION, NOVEMBER 2016.

First Semester

Elective – QUANTITATIVE TECHNIQUES FOR
MANAGEMENT

(For those who joined in July 2016 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL the questions.

Choose the correct answer :

1. A _____ is a collection of any type of objects, things or numbers.
(a) Set (b) Function
(c) Relation (d) Science
2. Algebraic functions are obtained through the algebraic operation _____ and through solving a finite number of algebraic equations.
(a) Addition (b) Subtraction
(c) Multiplication (d) All the above

3. Derivative of a constant function is _____.

- (a) That constant (b) Zero
(c) One (d) Two

4. The point at which the profit function is zero is called the _____ point.

- (a) Break-even
(b) Profitless
(c) Loss
(d) None of the above

5. _____ classification refers to the arrangement of data according to some characteristics that can be measured.

- (a) Qualitative (b) Quantitative
(c) Geographical (d) Chronological

6. Range of 5,8,10 and 14 is _____.

- (a) 9 (b) 5
(c) 6 (d) 8

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7. The probability of an event is expressed as a _____.

- (a) Zero (b) Ratio
(c) Multiplication (d) Subtraction.

8. _____ probability for statistically independent activities can be understood for two or more activities happening together.

- (a) Axiomatic (b) Priori
(c) Posteriori (d) Conditional

9. An ideal index number should satisfy _____ test.

- (a) Time Reversal (b) Factor Reversal
(c) Circular (d) All the above

10. Trend can be estimated using _____ method.

- (a) Free hand curve
(b) Semi-average
(c) Moving average
(d) All these

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b), each answer should not exceed 250 words.

11. (a) Show that :

(i) $A \cup B = B \cup A$

(ii) $B \cap A = A \cap B$

Or

(b) What are the different types of annuities?

12. (a) Find the Derivative of $y = \frac{5x^2 + 6x + 7}{2x^2 + 3x + 4}$.

Or

(b) The total revenue function for a computer is $R(x) = 2000x - 20x^2 - x^3$, find the level of sales that maximizes revenue and find the maximum revenue.

13. (a) Explain the purpose and importance of classification of statistical data.

Or

(b) Find the Median and Mode for the following data:

6, 8, 11, 8, 7, 8, 12, 6



14. (a) The probability that a contractor will get a plumbing contract is $\frac{2}{3}$ and that the probability that he will not get an electric contract is $\frac{5}{9}$. If the probability of getting atleast one contract is $\frac{4}{5}$, what is the probability that he will get both the contracts?

Or

- (b) An article manufactured by a company consists of two parts X and Y. In the process of manufacture of part X, 7 out of 100 are likely to be defective. Similarly, 8 out of 100 are likely to be defective in the manufacture of part Y. Calculate the probability that the assembled part will not be defective.

15. (a) Describe the importance of an index number.

Or

- (b) Find four yearly moving averages for the following data :

Year	2006	2007	2008	2009	2010
Sale of Cell Phones :	126	134	142	165	178
Year	2011	2012	2013	2014	
Sale of Cell Phones :	190	228	236	252	

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PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Describe the different types of Sets with suitable examples.

Or

- (b) Find the compound interest on Rs. 6,950 for three years if interest is payable half yearly, the rate for the first two years being 6% per annum and for the third year 9% per annum.

17. (a) 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) The total cost and total revenue of a firm are given by $C = x^3 - 12x^2 + 48x + 11$ and $R = 83x - 4x^2 - 21$.

Find the output

- (i) When the revenue is maximum?
(ii) When profit is maximum?

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18. (a) Explain the role of statistics in business and industry.

Or

- (b) The profits earned by 100 companies during 2014—15 are shown below.

Profits (in lakhs)	20-30	30-40	40-50	50-60
No. of companies	4	8	18	30
Profits (in lakhs)	60-70	70-80	80-90	90-100
No. of companies	15	10	8	7

Calculate the

- (i) Standard deviation
(ii) Co-efficient of variation

19. (a) A company has two plants to manufacture scooters. Plant I manufactures 70% of the scooters and Plant II manufactures 30%. At plant I, 80% of the scooters rated as standard quality and at plant II, 90% of scooters are rated standard quality. A scooter is picked up at random and is found to be of standard quality. What is the chance that it has come from plant I or plant II?

Or

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- (b) Fit a Poisson Distribution to the following data and calculate the theoretical frequencies.

$x:$	0	1	2	3	4
$f:$	123	59	14	3	1

20. (a) From the following data calculate :

- (i) Laspeyre's Index
(ii) Pasche's Index and
(iii) Fisher's ideal Index

Commodity	P_0	Q_0	P_1	Q_1
A	12	20	15	25
B	10	8	16	10
C	15	2	65	1
D	60	1	12	1
E	3	2	10	1

Or

- (b) Explain the different components of a time series in detail.

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