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Name.....................................

Reg. No..............................

THIRD SEMESTER B.Com./B.B.A. DEGREE EXAMINATION NOVEMBER 2018

(CUCBCSS—UG)

BCM 3A 11—BASIC NUMERIC SKILLS

(2017 Admissions)

Time : Three Hours

Maximum : 80 Marks

Use of Scientific / Basic Calculators and Mathematical / Statistical tables are permitted.

Part A

*This part consist of **two** bunches of questions.*
*Each bunch has **five** questions.*
Each question carries 1 mark.
*Answer **all** the ten questions.*

A. Choose the best answer from the options given :

1 $x^{a-b} \, x^{b-c} \, x^{c-a}$ is ————.

    (a) x.

    (b) 1.

    (c) 0.

    (d) $x^{2a+2b+2c}$.

2 A matrix in which every element is zero is called ———— matrix.

    (a) Unit.

    (b) Diagonal.

    (c) Scalar.

    (d) Null.

3 If each value is multiplied by 10, the C.V. will be increased by :

    (a) 10 %.

    (b) 5 %.

    (c) 15 %.

    (d) 0 %.

4 ———— is called positional measure.

    (a) Mean.

    (b) Median.

    (c) Mode.

    (d) H.M.

5 In a positively skewed distribution :

    (a) Mean < median < mode.

    (b) Mean > median > mode.

    (c) Both.

    (d) None.

Turn over

B. Fill in the blanks :

   6   In De Morgan's Law $(A \cap B)^1 =$ —————.

   7   Simple interest for the sum of 3,000 at 7 % p.a. for 3 years is —————.

   8   One quadratic equation $ax^2 + bx + c = 0$ has equal roots if —————.

   9   If the sum of two numbers is 8 and their product is 15, numbers are —————.

  10   When a frequency curve is more flat topped than the normal curve, it is called —————.

                                                                        $(10 \times 1 = 10$ marks$)$

Part B (Short Answer Questions)

*Answer any **eight** questions.*
Each question carries 2 marks.

  11   Define the term 'Rank' of the matrix.

  12   Determine the A.P. whose 3rd term is 5 and the 6th term is 8.

  13   Name some secondary data collection sources.

  14   If P = 4/5 Q and Q = 2 ½ R, then compute P : R.

  15   For a Normal Distribution, Mean is 60 and S.D. is 8. Find Median and QD.

  16   Prove that for two numbers 2 and 4, AM × HM = GM^2.

  17   Find the Range and its Coefficient :

Weight	:	5	8	10	12	25	30	38
No. of Children	:	2	3	8	10	9	3	2

  18   If the arithmetic mean for an observation is assumed to be 39 and its mode is 52. Its SD is 20. Calculate Karl Pearson's Coefficient of Skewness. To what extent is it skewed ?

  19   Solve $3^{x + 3} = 9^{2x + 1}$.

  20   What is an Ideal Index Number ?

                                                                        $(8 \times 2 = 16$ marks$)$

Part C (Short Essay Questions)

Answer any six questions.
Each question carries 4 marks.

21 Among 60 people, 35 can speak in English, 40 in Malayalam and 20 can speak in both the languages. Find the number of people who can speak in at least one of the language. How many can't speak in any of these languages ?

22 Solve $\sqrt{6 + \sqrt{6 + \sqrt{6 + \ldots \infty}}}$.

23 Draw a Pie diagram to represent the expenditure during a year in a state as given below :

Particulars		Amount (*in Crores*)
Industries	...	100.00
Irrigation	...	92.50
Agriculture	...	127.50
Transport and Roads	...	92.50
Education	...	68.00

24 Ages of 2 people are in the ratio of 3 : 4. After 10 years, their ages would be in the ratio of 4 : 5. Find their present ages.

25 If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$, show that $A^2 - 4A - 5I = 0$.

26 "Index Numbers are also Economic Barometers". Why ?

27 Mean and SD of 100 items are calculated by a student as 40 and 5. While calculating, items were taken as 40 and 50 instead of 60 and 30. Find the correct mean and variance.

28 What are the components of Time Series ? Explain.

(6 × 4 = 24 marks)

Part D (Essay Questions)

Answer any two questions from three.
Each question carries 15 marks.

29 If the roots of the equation $x^2 + ax - b = 0$ differ by unity. Prove that $a^2 + 4b - 1 = 0$.

Turn over

30 Calculate the Fisher's Ideal Index from the following data. Prove if it satisfies the Time Reversal and Factor Reversal tests :

Commodity	2016		2017	
	Price (P_0)	Quantity (Q_0)	Price (P_1)	Quantity (Q_1)
A	6	50	10	56
B	2	100	2	10
C	4	60	6	60
D	10	30	12	24
E	8	40	12	36

31 Define Statistics. Discuss its functions and limitations in the field of business and commerce.

$(2 + 7 + 6 = \text{marks})$

$[2 \times 15 = 30 \text{ marks}]$