Name.....

Reg. No.....

# **THIRD SEMESTER B.Sc./B.M.M.C. DEGREE EXAMINATION NOVEMBER 2015**

### (CUCBCSS-UG)

### **Common Course**

### A 11—BASIC NUMERICAL SKILLS

**Time : Three Hours** 

Maximum: 80 Marks

#### Part I

### Answer all questions in this part. Each question carries 1 mark.

Choose the correct answer from the choices given :

- 1. When are two sets A and B said to be disjoint?
  - (a'  $A \cap B = \emptyset$ . (b)  $\mathbf{A} n \mathbf{B} \mathbf{0}$ .
  - (c)  $\mathbf{A} \mathbf{u} \mathbf{B} = \mathbf{0}$ . (d) AuB#0.
- 2. The arithmetic mean between 2 and 8 is
  - (a) 10. **(b) 6.** (c) **5**. (d) 16.
- 3. If a matrix has 13 elements, what are the possible dimensions (orders) it can have ?
  - (a) 1 x 13, 13 x 1. (b) 13 x 1.
  - (c) **1** x **3**. (d) 13 x 13.

### 4. Statistics are

(a) Aggregate of fact.	(b) Systematically collected.
(c) Numerically expressed.	(d) All these.

5. For a distribution mean = 20, mode = 25, SD = 10, then coefficient of skewness is :

Fill in the blanks :-

- 6. The geometric mean between a and b is
- 7. A set which doesn't contain any element is called



- 8. If a, *b*, *c* are in GP, then  $b^2 = ----$ .
- 9. The measure of dispersion based on all the observations of the series is ———
- 10. The sales of a departmental store on Onam and Christmas are associated with the components of time series is \_\_\_\_\_

(10 x 1 = 10 marks)

## Part II

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

- 11. Prove  $A \cap B = B \cap A$ .
- 12. Solve  $x^2 = 10x + 21 = 0$ .
- 13. Which term in the AP 5, 2, -1, is -22?
- 14. What is a power set ?State the relation between cardinalities of a finite set and its power set.

15. If 
$$A = \begin{vmatrix} 1 & 3 & 4 \\ 2 & 6 & 8 \end{vmatrix}$$
, find  $A \times I_3$ .  
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- 16. Define consumer price index number.
- 17. Define Kurtosis.
- 18. Eight coins were tossed together. The number of heads obtained is given below. Find the mean

No. of heads	:	0	1	2	3	4	5	6	7	8
No. of times	:	1	9	26	59	72	52	29	7	1

#### **19. Define variance.**

20. Why Arithmetic mean is considered to be the best average?

#### (8 x 2 =16 marks)

### **Part III**

### Answer any six questions. Each question carries 4 marks.

**21.** Using Venn diagram, proved A  $n(B \cap C) = (A \cap B) \cap C$  and A  $u(B \cup C) = (A \cup B) \cup C$ .

- Find the middle term in the AP 20, 16, 12, ....., 176. 23.
- Solve the following systems of simultaneous equation : 24.

$$3x + 4y = 37, 8x + 5y = 76$$

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Using :

(a) Elimination method : (b) Substitution method.

25. Find 
$$f(A)$$
 if  $A = \begin{bmatrix} 2 & 0 & 1 \\ 2 & 1 & 3 \end{bmatrix}$ , where  $f(x)$  is given by  $f(x) = x^2 - 5x + 6$ .  
 $1 - 1 = 0$ 

- Explain the components of time series. 26.
- An economy grows at the rate of 2 % in the first year, 2.5 % in the second year, 3 % in the third 27. year, 4 % in the fourth year, 5 % in the fifth year, 6 % in the sixth year \_\_\_\_\_ and 10 % in the tenth year. What is the average rate of growth of the company?
- Find coefficient of variation : 28.

Age	0 - 10 1	0 - 20 2	20 - 30 3	0 - 40 4	40 - 50 5	50 - 60 6	50 - 70 7	<b>70 - 80</b>
No. of persons	15	30	53	75	100	110	115	125

(6 x 4 = 24 marks)

#### **Part IV**

### Answer any two questions. Each question carries 15 marks.

29. Solve the following equations by matrix method :

$$2x + 3y + 3z = 5$$
  
 $x - 2y + z = -4$   
 $3x - y - 2z = 3.$ 



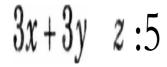
N. Calculate the appropriate measure of skewness for the following data

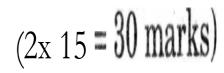
Income	Ida 100100 <b>- 139</b>	140 - 179	180 219		- 299			
No. of <b>Workers</b>		39	48	60	46			
Income	300 - 339 <b>340</b> and above							
No. of workers			Ster					

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31. Use Crum's rule to solve

x + y = 16





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