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**THIRD SEMESTER (CUCBCSS—UG) [SPECIAL] EXAMINATION  
NOVEMBER 2018**

Common Course

BCM 3A 11—BASIC NUMERICAL SKILLS

(2017 Admissions)

Time : Three Hours

Maximum : 80 Marks

**Part A**

*Answer all questions.  
Each question carries 1 mark.*

I. Choose the correct answer :

1 Find four numbers in AP such that their sum is 50 and greatest of them is 4 times the least :

- (a) 4,8,12,16. (b) 5,10,15,20.  
(c) 6,12,18,24. (d) 7,14,21,28.

2 If  $A = \begin{bmatrix} 3 & -5 & 2 \\ 7 & 0 & 8 \\ -2 & 4 & 8 \end{bmatrix}$  and  $B = \begin{bmatrix} -3 & 2 & 7 \\ 2 & -9 & 7 \\ 1 & -1 & 2 \end{bmatrix}$   $A + B =$

- (a)  $\begin{bmatrix} 0 & -3 & 9 \\ 15 & -9 & 15 \\ -1 & 3 & 10 \end{bmatrix}$ . (b)  $\begin{bmatrix} 0 & 3 & -9 \\ -15 & 9 & -15 \\ 1 & -3 & -10 \end{bmatrix}$ .  
(c)  $\begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$ . (d)  $\begin{bmatrix} 3 & -8 & 11 \\ 22 & -9 & 23 \\ -3 & 7 & 18 \end{bmatrix}$ .

3 If  $A = \{1, 3, 5, 7, 9, 11, 13, 15\}$ ,  $B = \{5, 9, 13, 17, 21\}$  and  $C = \{1, 3, 9, 13, 17, 21\}$   $A \cup B =$

- (a)  $\{5, 9, 13\}$ . (b)  $\{5, 7, 9, 11\}$ .  
(c)  $\{5, 9, 17, 21\}$ . (d)  $\{1, 3, 5, 7, 9, 11, 13, 15, 17, 21\}$ .

4 Arithmetic mean of 10, 90, 85, 103, 11, 29, 84, 15, 35, 80 is :

- (a) 103. (b) 11.  
(c) 54.2. (d) 84.

5 Set of questions printed and sent to the respondent for data collection is called \_\_\_\_\_.

- (a) Schedule. (b) Interview.  
(c) Questionnaire. (d) Observation.

(5 × 1 = 5 marks)

**Turn over**

II. Fill in the blanks :

- 6 If  $ax^2 + bx + 8 = 0$  does not have 2 distinct real roots, the minimum value of  $2a + b =$  \_\_\_\_\_.
- 7 Fifteenth term of the AP 13, 26, 39, .... Is \_\_\_\_\_.
- 8 If  $A = \{a, b, c, d, e, f\}$  and  $B = \{a, e, i, o, u\}$   $A \cap B =$  \_\_\_\_\_.
- 9 Determinant of the is matrix  $\begin{bmatrix} p & q \\ r & s \end{bmatrix}$  is \_\_\_\_\_.
- 10 A representative part of the whole population is called \_\_\_\_\_.

(5 × 1 = 5 marks)

**Part B (Short Answer Questions)**

*Answer any eight questions.*

*Each question carries 2 marks.*

- 11 What is primary data ?
- 12 What is frequency curve ?
- 13 Find median : 17, 32, 35, 33, 15, 21, 41, 32, 11, 10, 20.
- 14 Calculate mean deviation from median and its coefficient for the following values :  
5, 28, 33, 44, 83, 87, 96, 99, 25, 35, 82.
- 15 Find the harmonic mean of the following : 2, 3, 4, 5.  $\frac{2}{\frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5}}$
- 16 Determine trend using semi averages method

Year	: 2000	2001	2002	2003	2004	2005	2006	2007	2008
Values	: 10	12	15	20	18	25	24	28	34

- 17 Find simple index number

Items	Price in the base year	Price in the current year
1	5	7
2	10	12
3	15	25
4	20	18
5	8	9

- 18 Represent the following using Venn diagram  $A \cap B$ .
- 19 Find the sum of the series 2, 0, -2, -4, -6, ..... 22 term.
- 20 Solve  $[3/(x + 6)] + [2/(x - 1)] = 5/(x + 5)$ .

(8 × 2 = 16 marks)

**Part C (Short Essay Questions)**

*Answer any six questions.*

*Each question carries 4 marks.*

21 Distinguish between ogive and frequency polygon.

22 Discuss the importance of averages.

23 Find out mean :

Marks	:	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of Students	:	5	7	15	25	20	15	8	5

24 Determine Geometric Mean for the following distribution :

$x$  : 135 231 352 430

$f$  : 2 3 4 3

25 For the following data calculate standard deviation :

Marks : 2 4 6 8 10

Number of Students : 8 10 16 9 7

26 From the following data compute quantity index number :

Commodities	2001		2008	
	Price	Total Value	Price	Total Value
A	8	80	10	110
B	10	90	12	108
C	16	256	20	340

27 Find the 15th term and the sum of the first 10 terms for the sequence 2, 10, 50...

28 Solve  $2x^2 - 13x + 15 = 0$ .

(6 × 4 = 24 marks)

**Part D (Essay Questions)**

*Answer any two questions.*

*Each question carries 15 marks.*

29 The scores of two batsmen A and B during a certain match are as follows. Examine which one of the two is more consistent in scoring. Who is more efficient batsman ?

Batsman	A	:	10	12	80	70	60	100	0	4
Batsman	B	:	8	9	7	10	5	9	10	8

**Turn over**

- 30 From the following data find Fisher's index number and show that the Time and Factor Reversal tests are satisfied by it :

	Base year		Current year	
	Price	Expenditure	Price	Expenditure
A	8	80	10	120
B	10	120	12	96
C	5	40	5	50
D	4	56	3	60
E	20	100	25	150

- 31 Define Statistics. What are its important functions ?

(2 × 15 = 30 marks)