

**THIRD SEMESTER B.Com./B.B.A. DEGREE EXAMINATION  
NOVEMBER 2014**

(UG—CCSS)

Common Course

A13—BASIC NUMERICAL SKILLS

**COMMERCE  
FACTORY**

Maximum : 30 Weightage

Time : Three Hours

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

**Part A**

*This part consist of three bunches of questions carrying equal weightage.*

**PART A***Answer all the questions**Each question carries one mark***A. Fill in the blanks :**

- 1 In a Venn Diagram \_\_\_\_\_ represents the universal set.
- 2 The  $n^{\text{th}}$  term of an Arithmetic progression whose first term is 'a' and common difference 'a' is \_\_\_\_\_.
- 3 Let A and B are two disjoint matrices and  $n(A) = 2$ ,  $n(B) = 3$  then  $n(A \cup B) =$  \_\_\_\_\_.
- 4 Bar diagrams are \_\_\_\_\_ dimensional diagrams.

**B. Choose the correct answer from the brackets :**

5 An example of a infinite set is :

- |                      |  |
|----------------------|--|
| (a) $\{ \}$          | (b) $\{ x : x \in \mathbb{N} \text{ and } 0 \leq x \leq 10 \}$ . |
| (c) Set of integers. | (d) Set of English alphabets.                                    |

6 If 3, x, 12 are in GP. Then  $x =$  \_\_\_\_\_.

- |         |                    |
|---------|--------------------|
| (a) 7.5 | (b) 6.             |
| (c) 9.  | (d) None of these. |

7 The trace of the matrix is  $\begin{bmatrix} 3 & -1 \\ 0 & 3 \end{bmatrix}$ 

- |        |                    |
|--------|--------------------|
| (a) 5. | (b) 6.             |
| (c) 9. | (d) None of these. |

**Turn over**

Answer  
 1. Universal Set  
 2.  $a + (n-1)a$   
 3. 5  
 4. 2  
 5. (b)  
 6. (b)  
 7. (b)

8 The sum of squares of deviations from mean is :

(a) Least

(b) Zero.

(c) Maximum.

(d) None of these.

C. Answer in one word :

9 Write the transpose of the matrix  $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 2 & 1 \\ 2 & 4 & 3 \end{bmatrix}$ .

10 How long will it take any sum of money to double itself at simple interest rate of 5% ?

11 The common ratio of the G.P :  $1, \frac{1}{4}, \frac{1}{16}, \frac{1}{64}, \dots$  is \_\_\_\_\_.

12 Name a graph which represents frequency distribution.

(10 × 1 = 10 marks)

### PART B

Answer any eight questions

Each question carries two marks

13 Solve by factoring  $x^2 - x - 12$ .

14 Let  $A = \begin{bmatrix} 2 & 3 & -4 \\ 6 & 7 & 8 \end{bmatrix}$ ,  $B = \begin{bmatrix} 6 & -3 & 2 \\ 5 & 0 & 8 \end{bmatrix}$ . Find  $4A - 3B$ .

15 If  $A = \{1, 2, 3\}$ ,  $B = \{2, 3, 4\}$  then find  $A \cup B$ ,  $A \cap B$ ,  $A - B$  and  $B - A$ .

16 Find the sum  $1 + 4 + 7 + \dots$  upto 20 terms.

17 Write a short note on the scope of statistics.

18 Find compound interest on Rs.6250 at 4% per annum for 2 years computed annually.

19 Write a short note on Lorenz curve.

20 If the arithmetic mean of two observations is 25 and their harmonic mean is 9, find their geometric mean.

21 What is time series? What are its components?

(8 × 2 = 16 marks)

**PART C**

*Answer any six questions  
Each question carries 4 marks*

22 If  $A = \begin{bmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}$ . Find  $A^{-1}$ .

23 Find three numbers in AP whose sum is 9 and product is ~~-165~~.

24 Explain the concepts of effective rate of interest, nominal rate of interest and force of interest. Bring out the relationship among them.

25 What are the essentials of a good questionnaire?

26 Fifty students appeared in an examination. The results of the passed students are given below :

Marks	...	40	50	60	70	80	90
No. of students	...	6	14	7	5	4	4

If the average marks of all students are 52. Find the average marks of the students who failed in the examination.

27 From the following data, calculate standard deviation :

$X_i$	...	10	11	12	13	14	15	16	17	18
$f_i$	...	2	7	10	12	15	11	10	6	3

28 Explain the term secular trend. What are the objectives of measuring trend?

**(5 × 4 = 24 marks)**

**PART D**

*Answer any two questions  
Each question carries 15 marks*

29 Solve the system of equations with the help of matrices.

$$2x - 2y + z = 1$$

$$x + 2y + 2z = 2$$

$$2x + y - 2z = 7.$$

Turn over

30 Fit a straight line trend to the following data by the method of least squares and estimate the likely profit for the year 2013. Also calculate the trend values :

Year	...	2004	2005	2006	2007	2008	2009	2010
Profit (in Rs.)	...	60	72	75	65	80	85	95

31 An enquiry into the budgets of the middle class families in a certain city in India are as follows :

Item	...	Food	Fuel	Garments	Rent	Miscellaneous
Expenditure	...	35%	10%	20%	15%	20%
Price in 2005	...	150	25	75	30	40
Price in 2010	...	175	38	85	40	62

What change in the cost of living of 2010 has taken place as compared to 2005 ?

(2 × 15 = 30 marks)