

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

(UG—CCSS)

Common Course

A13—BASIC NUMERICAL SKILLS

Time : Three Hours

Maximum : 30 Weightage

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

Part A

*This part consist of **three** bunches of questions carrying equal **weightage**.
Each bunch has **four** questions.
Answer all **twelve** questions.*

A. Fill in the blanks :

- 1 In a Venn Diagram _____ represents the universal set.
- 2 The n^{th} term of an Arithmetic progression whose first term is 'a' and common difference 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) $\{ x : x \in \mathbb{N} \text{ and } x > 10 \}$ |
| (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 $\begin{vmatrix} 3 & -1 \\ 0 & 3 \end{vmatrix}$

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

Turn over

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 $A = \begin{vmatrix} 1 & 2 & 3 \\ 2 & 2 & 1 \\ 2 & 4 & 3 \end{vmatrix}$

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 : $\frac{1}{4}, \frac{1}{16}, \frac{1}{64} \dots$ _____

12 Name a graph which represents frequency distribution.

(12 x $\frac{1}{4}$ = 3 weightage)

Part B

Answer all **nine** questions.

Each question carries a **weightage** of 1.

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

14 Let $A = \begin{bmatrix} 1 & 3 & 4 \\ 6 & 7 & 8 \end{bmatrix}$, $B = \begin{bmatrix} 6 & -3 & 1 \\ 5 & 0 & 8 \end{bmatrix}$ 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 ?

(9 x 1 = 9 weightage)

Part C

*Answer any five questions from seven.
Each question carries a **weightage** of 2.*

22 If $A = \begin{pmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{pmatrix}$. 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 x 2 = 10 weightage)

Part D (Essays Questions)

*Answer any two questions from three.
Each question carries a **weightage** of 4.*

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

$$\begin{aligned} 2x - 2y + z &= 1 \\ x + 2y + 2z &= 2 \\ 2x + y - 2z &= 7. \end{aligned}$$

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 x 4 = 8 weightage)