

THIRD SEMESTER B.Com./B.B.A. DEGREE EXAMINATION, DECEMBER 2011
(CCSS)

Common Course

BC 3A 13—BASIC NUMERICAL SKILLS

(Common for B.Com./B.B.A.)

Time : Three Hours

Maximum Weightage : 30

I. Objective Type Questions. Answer all twelve questions:

Choose the correct answer :

1. The common difference of the A.P. 1, -1, -3, -5 is :
(a) 1. (b) -1. (c) -2. (d) 2.
2. The quadratic equation $ax^2 + bx + c = 0$ has equal roots if :
(a) $b^2 - 4ac < 0$. (b) $b^2 - 4ac > 0$. (c) $b^2 - 4ac = 0$. (d) $b^2 - 4ac = 1$.
3. Which of the following statement is true ?
(a) $0 \in \{ \}$. (b) $0 \subset \{ \}$. (c) $0 \in \{0\}$. (d) $0 \subset \{0\}$.
4. Which of the following is true for unimodal asymmetrical sets of data ?
(a) Mean — Mode = 3 (Mean — Median). (b) Mean — Median = 3 (Mean — Mode).
(c) Mean — Median = 2 (Mean — Mode). (d) None of these.

Fill in the blanks :

5. If A is a matrix of order 4×3 and B is a matrix of order 3×5 , then the order of the product AB is _____.
6. The common ratio of the G.P. $1, \frac{1}{3}, \frac{1}{9}, \frac{1}{27}, \dots$ is _____.
7. If a set A contains n elements, then power set of A contains _____ elements.
8. In a Symmetric distribution, the relation between the Mean, Median and Mode is given by _____.

Answer the following :

9. Define zero (Null) matrix.
10. Write down any two measures of central tendency.
11. What is the simple interest for Rs. 10,000 at the rate of 15% per annum for 2 Years ?

12. $A = \begin{bmatrix} 0 & -1 & 5 \\ 2 & 8 & 9 \\ 1 & 0 & 8 \end{bmatrix}$ find $-5A$.

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

II. Short Answer Questions. Answer all questions :

13. Compute the product AB where $A = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$ and $B = [2 \ 3 \ 4 \ 5]$.

Turn over

Chp 1 ✓
2 ✓

6 ✓
J

14. Define geometric mean of a set of numbers.
15. Define mean deviation of a set of numbers.
16. Find the sum of the first 10 terms of the G.P. $9, -3, 1, \dots$
17. Find the 20th term of the A.P. whose first term is 5 and common difference is 2.
18. What do you mean by Kurtosis?

19. Let $A = \begin{bmatrix} 2 & 5 \\ -3 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & -5 \\ 3 & K \end{bmatrix}$, what value of K if any make $AB = BA$.

20. $A = \{x : x \text{ is a natural number satisfy } 1 < x \leq 6\}$.

$B = \{x : x \text{ is a natural number satisfy } 6 < x \leq 10\}$. Find $A \cup B$ and $A \cap B$.

21. Is the inverse of the matrix $A = \begin{bmatrix} 2 & -4 \\ -2 & 4 \end{bmatrix}$ exists? Justify your answer.

(9 × 1 = 9 weightage)

III. Short Essay or Paragraph Questions. Answer any five questions from seven.

22. Prepare a questionnaire for understanding consumer preferences to evolve better ways of providing shopping facilities to the consumer visiting Malls.

23. Calculate the median :

Marks	0 - 10	10 - 30	30 - 60	60 - 80	80 - 90
No. of Students	5	15	30	8	2

24. Find the amount to be paid at the end of 2 Years on Rs. 2,400 at 5% per annum compounded annually?

25. Find the sum of the first 18 terms of the A.P. $9, -3, -15, \dots$ and also find the sum of the first 2n terms.

26. Find the value of x such that $PQ = QR$ where P, Q, R are $(6, -1)$, $(1, 3)$ and $(x, 8)$ respectively.

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

$$5x + 2y = 4$$

$$7x + 3y = 5.$$

28. If $A = \{0, 2, 3, 5\}$, $B = \{-1, 2, 3, 7, 9\}$. Find

(a) $A \cup B$. (b) $A \cap B$. (c) $A - B$. (d) $(A - B) \cup (B - A)$.

(5 × 2 = 10 weightage)

IV. Essay Questions. Answer any two questions from three :

29. What do you understand by Skewness? Using figures distinguish between positive and negative skewness. Also show the relative positions of mean, median and mode in the figure.

30. Insert three geometric means between the numbers 1 and 256.

31. Find the inverse of the matrix $A = \begin{bmatrix} 2 & 6 & 7 \\ 0 & 2 & 1 \\ 2 & 3 & 4 \end{bmatrix}$.

(2 × 4 = 8 weightage)