

FOURTH SEMESTER B.Com./B.B.A. DEGREE EXAMINATION, APRIL 2014

(U.G.—CCSS)

Common Course

A13—BASIC NUMERICAL SKILLS

Time : Three Hours

Maximum : 30 Weightage

I. Objective Type Questions. Answer all *twelve* questions :—

Choose the correct answers :

1 If A and B are two non-empty sets then $A \cap (A \cup B)^c$ is equal to :

(a) A.

(b) B.

(c) ϕ .

(d) None of these.

2 Which of the following is not a measure of central tendency ?

(a) Mean.

(b) Median.

(c) Mode.

(d) Standard deviation.

3 If the first and seventh term of an AP is 6 and 24 respectively then its common difference is :

(a) 8

(b) 3.

(c) 9.

(d) 6.

4 The equation $y = 4x + k$, k any real number has :

(a) No solution.

(b) One solution.

(c) Finite no. of solutions.

(d) Infinite no. of solutions.

Fill in the blanks :—

5 Let $A = \begin{pmatrix} 0 & 2 \\ 0 & 3 \end{pmatrix}$ and $B = \begin{pmatrix} 2 & 3 \\ 0 & 0 \end{pmatrix}$ then $AB = \underline{\hspace{2cm}}$.6 The standard deviation of first n in natural numbers is $\underline{\hspace{2cm}}$.

Turn over

7 The n^{th} term of the sequence $\frac{1}{2}, \frac{1}{6}, \frac{1}{18}, \frac{1}{54}, \dots$ is _____.

8 The point $(-2, -7)$ lies in the _____ quadrant.

Answer the following :—

9 Mean of 100 items is 49. It was discovered that three items which should have 60, 70, 80 were wrongly read as 40, 20, 50 respectively. What is the correct mean ?

10 Define De-Morgan Laws for two sets A and B.

11 Find all solutions for the equation $2x + 2y = 0$.

12 What can you say about the data if the S.D. is zero ?

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

II. Short Answer Questions. Answer all *nine* questions. Each question carries 1 weightage.

13 Prove or disprove with the help of an example that matrix multiplication is not commutative.

14 At what rate percent per annum will Rs. 6950 produce Rs. 347.50 at simple interest in 5 months.

15 Solve the quadratic equation $4x^2 - \sqrt{3}x + \frac{1}{4} = 0$.

16 $A = \{2, 3, 4, 5, 7, 8\}$ $B = \{7, 8, 9, 10\}$ $C = \{1, 2, 3, 4, 5, 6, 7\}$ Find :

(a) $(A \cup B) \cap C$.

(b) $(A - B) \cup (B \cap C)$.

17 Find the first term and common difference of an AP whose 11th term and 49th term is 24 and 508 respectively.

18 Write down various methods for representing frequency distributions graphically.

19 Write down the measures of dispersion.

20 Find the inverse of the matrix $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$.

21 If P (0, 2) and Q (2, 4) are two points of a line PQ, then write the equation of line PQ and check whether (1, 3) is a point on this line.

($9 \times 1 = 9$ weightage)

III. Short Essay or Paragraph questions. Answer any *five* questions from seven. Each question carries 2 weightage.

22 If $x + 4, 3x - 2, 4x - 2, \dots$ are in arithmetic sequence, then

- Find the value of x .
- Write the sequence.
- Find the n^{th} term of the sequence.

23 Find the three number in GP whose sum is 28 and product is 512.

24 Solve the system of equations.

$$5x + 6y = 3$$

$$7x + 11y = 8$$

25 The mean and median of a frequency distribution are 23.2 and 25.5 respectively. Find the approximate value of its mode. Calculate pearson's coefficient of skewness if the standard deviation is 4.5.

26 Draw the histogram and a frequency polygon for the following data :

Class limits	:	0—5	5—10	10—15	15—20	20—25	25—30	30—35
Frequency	:	32	38	48	90	120	112	80
						35—40	40—45	45—50
						62	47	21

27 Compute the inverse of the matrix $\begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}$.

28 Find the compound interest on Rs. 12,000 for three years at 10 % per annum compounded annually ?

(5 × 2 = 10 weightage)

Turn over

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

29 What are the different ways of diagrammatic representation of statistical data ? Draw the l than ogive of the following distribution.

Class	:	Less than 20	20—35	35—45	45—60	60—80	80—100
Frequency	:	35	68	92	44	38	23

30 Solve the following system of equations :

$$x + y + z = 9$$

$$2x + 5y + 7z = 52$$

$$2x + y - z = 0.$$

31 Find the compound interest at the rate of 10 % per annum for four years on the princ which in four years at the rate of 4 % per annum gives Rs. 1,600 as simple interest.

(2 × 4 = 8 weight)