

FOURTH SEMESTER B.Com. DEGREE EXAMINATION, MAY 2011

(CCSS)

Common Course

BC4A 13/BB4 A 13—BASIC NUMERICAL SKILLS

(Common for B.B.A. and B.Sc. Alternative Pattern and B.T.A.)

Time: Three Hours

Maximum : 30 Weightage

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

Choose the correct answer :

1 The distance of the point P (- 3, 4) from the origin is :

- (a) 3. (b) 4.
(c) 5. (d) 7.

2 The equation $y = 2x + 5$ has :

- (a) No solution. (b) One solution.
(c) Three solution. (d) Infinitely many solution.

3 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) $b^2 - 4ac = 1$.

4 The point of intersection of the 'less than' and 'more than' ogive corresponds to :

- (a) mean. (b) median.
(c) geometric mean. (d) harmonic mean.

Fill in the blanks :

5 The point whose co-ordinate is (- 1, 1) lies in _____ quadrant.

6 A and B are two sets and $A \subset B$, then $A \cap B =$ _____.

7 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 _____.

8 In a symmetric distribution, the relation between the mean, median and mode is given by _____.

Turn over

Answer the following :—

- 9 What is the common difference of the A.P. $-1, \frac{1}{4}, \frac{3}{2}, \dots$?
- 10 What is the simple interest for Rs. 10,000 at the rate of 15% per annum for 2 years
- 11 Define zero (or null) matrix.
- 12 Write down the important methods of studying dispersion ?

(12 × ¼ = 3 wa

II. Short Answer questions. Answer all nine questions :

13 Solve $\frac{7x+4}{x+2} = -\frac{4}{3}$.

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

- 15 $A = \{x : x \text{ is a natural number satisfy } 1 < x < 6\}$
 $B = \{x : x \text{ is a natural number satisfy } 6 < x < 10\}$
Find $A \cup B$ and $A \cap B$?

16 Find the 8th term of the G.P. $1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \dots$.

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

18 Solve the equation $2x^2 - 2\sqrt{3}x + 1 = 0$.

- 19 Define Arithmetic mean of a set of numbers.
- 20 Define Karl Pearson's coefficient of skewness.
- 21 What do you mean by coefficient of variation ?

(9 × 1 = 9 wa

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

- 22 Prove that the points (6, 2), (3, -1) and (-2, 4) represents the vertices of a right triangle.
- 23 The ages of Hari and Hani are in the ratio 4 : 5. Eight years from now, the ratio of the will be 5 : 6. Find their present age ?

- 24 Insert three arithmetic means between 3 and 19.
 25 Solve the system of equations with the help of matrice.

$$5x + 2y = 4$$

$$7x + 3y = 5$$

- 26 Find the three numbers in G.P. whose sum is 26 and product is 216.
 27 Construct a histogram and frequency polygon :

| | | | | | | | | | |
|-----------|-----------|---------|---------|---------|---------|---------|---------|---------|--|
| Class | : 15 - 19 | 20 - 24 | 25 - 29 | 30 - 34 | 35 - 39 | 40 - 44 | | | |
| Frequency | : 9 | 11 | 10 | 44 | 45 | 54 | | | |
| | | | | 45 - 49 | 50 - 54 | 55 - 59 | 60 - 64 | 65 - 69 | |
| | | | | 37 | 26 | 8 | 5 | 1 | |

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

(5 × 2 = 10 weightage)

V. Essay questions. Answer any *two* questions from three.

- 29 A manufacturer of radio sets produced 600 units in the third year and 700 units in the seventh year. Assuming that the production uniformly increases by a fixed number every year :

Find :

- The production in the first year
- The production in the 10th year
- The total production in 7 year.

- 30 Govind borrowed Rs. 26,400 from a bank to buy a Scooter at the rate of 15% per annum compounded yearly. What amount will be pay at the end of 2 years and 4 months to clear the loan ?

- 31 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.

(2 × 4 = 8 weightage)