SN – 373

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I Semester B.B.M. Examination, November/December 2013
(Repeaters) (Prior to 2011-12)
BUSINESS MANAGEMENT
Paper – 1.6 : Business Mathematics

Time : 3 Hours Max. Marks : 90

Instruction : *Answers should be written in* ***English***.

SECTION – A

Answer **any ten** of the following sub-questions. **Each** sub-question carries **two** marks. **(2×10=20)**

1. a) What is a rational number ?

   b) Find the HCF of 210 and 55.

   c) What is geometric progression ?

   d) What is a scalar matrix ?

   e) Find the LCM of 48, 72 and 108.

   f) Find the 10^{th} term of the A.P. 2, 0, –2, –4, ...

   g) If $A = \begin{bmatrix} 2 & -1 \\ 3 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 1 \\ 2 & 1 \end{bmatrix}$ find (A. B).

   h) Calculate the simple interest on Rs. 500 for 5 years at 6% per annum.

   i) Find the value of

      a) $^{10}C_6$

      b) $^{5}C_2$.

   j) Solve the equation

      $7(x - 3) - 3(x + 4) = 7 + 2\,(3x - 8)$

   k) Solve the equation by factorisation method $\rightarrow x^2 - 4x + 9 = 0$.

   l) Define ratio.

P.T.O.

SECTION – B

Answer **any five** of the following. **Each** question carries **five** marks. **(5×5=25)**

2. If $A = \begin{bmatrix} 2 & 5 \\ 3 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 4 \\ 7 & 8 \end{bmatrix}$ find AB and BA.

3. If $A = \begin{bmatrix} 0 & -2 \\ -2 & 0 \end{bmatrix}$ prove that $A^2 - 4I = 0$ where I is the identity matrix and '0' is a null matrix.

4. Solve by Cramer's rule.

   $x - 2y = 16$

   $3x + y = -1$

5. If 20 men can do a job in 18 days, how long will 60 men take to do the same job ?

6. Solve $9x^2 - 3x - 2 = 0$ by using the formula method.

7. What principal invested today will amount to 1630.80 in 4 years at 13% per annum compound interest ?

8. Differentiate w.r.t. x

   $y = (x^2 + 1)(3x^2 - 2x^3)$.

9. Evaluate

$$\lim_{x \to 2} \frac{x^2 + 3x - 10}{x^2 - 9x + 14}$$

SECTION – C

Answer **any three** of the following. **Each** question carries **fifteen** marks. **(3×15=45)**

10. a) If $A = \begin{bmatrix} 1 & -1 & 1 \\ 2 & -1 & 0 \\ 1 & 0 & 0 \end{bmatrix}$ find A^2.

    b) How many different words can be formed with the letters of the word ABHIJITH ? How many of these begin with A and end with H ? **(8+7)**

11. a) If $y = \frac{x^2 - 3x + 5}{x^2 + 3x + 5}$ find $\frac{dy}{dx}$.

b) Evaluate $\lim_{x \to (-3)} \frac{x^3 + 27}{x + 3}$. **(8+7)**

12. a) Monthly incomes of A and B are in the ratio of 3 : 4 and monthly savings are in the ratio of 1 : 2. If each spends Rs. 2,000, find their monthly savings and incomes.

b) The sum of 'n' elements of A.P is given as 25, 22, 19, 16 .... is 116. Find the number of terms and the last term. **(8+7)**

13. a) How many elements of the G.P 1, 2, 4, 8... must be taken so that it amounts to 255 ?

b) In how many ways can a football team of 11 players selected from 15 players. How many of these will

a) include one particular player

b) exclude one particular player. **(8+7)**

14. a) Find simple interest on Rs. 17,575 @ $5\frac{3}{4}$% p.a. for 11 months.

b) Solve for x and y

$7x - 5y = 11$

$3x + 2y = 13$. **(8+7)**