

(20113)

Roll No. ....

B. B. A.- I Sem.

18037

B. B. A. Examination, Dec. 2012

Business Mathematics

(BBA-102)

(New)

Time : Three Hours]

[Maximum Marks : 75

Note: Attempt all the Sections as per instructions.

**Section-A**

**(Very Short Answer Questions)**

Attempt all the five questions. Each question carries 3 marks. Very short answer is required not exceeding 75 words.  $3 \times 5 = 15$

1. What is the ratio of 8 cm to 3 m?
2. Write all subsets of the set  $\{1, 2, 3\}$ .
3.  $A = \begin{bmatrix} 3 & 1 \\ 7 & 6 \end{bmatrix}$  and  $B = \begin{bmatrix} 4 & 7 \\ 5 & 2 \end{bmatrix}$ , find  $A + B$ .

4. What is Gaussian Elimination method?
5. Integrate with respect to  $x$  :

$$4x^3 - 3x^2 + 2x + 1.$$

**Section-B**

**(Short Answer Questions)**

Attempt any two questions out of the following three questions. Each question carries  $7\frac{1}{2}$  marks. Short answer is required not exceeding 200 words.

$$7\frac{1}{2} \times 2 = 15$$

6. Total cost function of a firm is :

$$C = \frac{1}{3}x^3 - 3x^2 + 9x.$$

Find the output level at which the average cost (AC) is minimum.

7. Find  $\frac{dy}{dx}$ , if  $y = (x^3 + 2x)^2$ .
8. Find the H. P. whose fifth and eighth terms are  $(-)\frac{7}{26}$  and  $(-)\frac{1}{8}$  respectively.

**(Detailed Answer Questions)**

Attempt any *three* questions out of the following five questions. Each question carries 15 marks.

Answer is required in detail.  $15 \times 3 = 45$

9. In what time, a sum of money trebles at 8% Compound interest per annum if the interest falls due annually?

(Given :  $\log 2 = 0.30103$  and  $\log 3 = 0.47712$ ).

10. Calculate the profit maximising output ( $q$ ) and the amount of maximum profit if:

$$\text{Price} = q^2 + 43, \text{ and}$$

$$\text{Cost} = 15q^2 - 20q.$$

11. Find the maximum and minimum values of the following function :

$$y = \frac{2}{3}x^3 + \frac{1}{2}x^2 - 6x + 8.$$

12. Solve for  $x$  and  $y$  if:

$$3x + 2y = I$$

$$2x - y = Q$$

where  $I$  and  $Q$  are respectively unit matrix and null matrix of order  $3 \times 3$ .

(4)

13. Three daily newspapers are published from a city :  $A$ ,  $B$  and  $C$ . The number of readers of one, two or all of these newspapers is as follows :

$$N = 1,000 \quad (AB) = 25$$

$$(A) = 70 \quad (AC) = 35$$

$$(B) = 85 \quad (BC) = 30$$

$$(C) = 65 \quad (ABC) = 15$$

Find out the number of the persons who read :

- (i) Only  $A$
- (ii) At least two daily newspapers
- (iii)  $B$  and  $C$  only.

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