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(21213) Roll No. .....

B.B.A.-I Sem.

18037

B. B. A. Examination, Dec. 2013

BUSINESS MATHEMATICS

(BBA-102)

(New)

Time : Three Hours] *[Maximum Marks : 75*

Note : Attempt questions from each Section as per instructions.

Section-A

(Very Short Answer Questions)

Attempt all the *five* questions of this Section. Each question carries 3 marks. Very short answer is required not exceeding 75 words. 3×5=15

1. If matrix $A=\begin{bmatrix}5 & 6 & 7\\ 8 & 9 & 10\end{bmatrix}$ and $A+B=0$, find the value of B.

2. Find the power set of $B=\{2,3,5\}$.

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3. Find the sum of the A.P. $1+4+7+.....$ up to 10 terms.

4. Divide 240 into three parts so that $\frac{1}{3}$ of the first, $\frac{1}{4}$ of the second and $\frac{1}{5}$ of the third part are equal.

5. Integrate 10^{5x} with respect to x.

Section-B

(Short Answer Questions)

This Section contains three questions, attempt any *two* questions. Each question carries 7½ marks. Short answer is required not exceeding 200 words. 7½×2=15

6. Find $\frac{dy}{dx}: x^3=y^3-3axy$.

7. If $A=\begin{bmatrix}1 & 2\\ 3 & 4\end{bmatrix}$, $B=\begin{bmatrix}-1 & 2\\ 2 & -1\end{bmatrix}$ and $C=\begin{bmatrix}3\\ 1\end{bmatrix}$, compute ABC.

8. In a class, 40 students study either Mathematics or Statistics or both. 12 students study both subjects and 17 study only Statistics. How many students study Mathematics? How many study only Mathematics?

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Section-C

(Detailed Answer Questions)

This Section contains five questions, attempt any *three* questions. Each question carries 15 marks. Answer is required in detail. $15 \times 3 = 45$

9. Solve the following equations using matrix :

$$3x + 4y + 5z = 38$$

$$2x - y + 8z = 33$$

$$4x + 3y + 2z = 25 .$$

10. Mr. A wants to distribute ₹ 51,783 among his two sons who are respectively 12 and 15 years old, in such a way that the sums invested @ 5% p.a. Compound interest will give the same amount to both of them when they attain the age of 18 years. How should he divide the sum?

11. The demand function and the average cost function of a manufacturer are $P = 400 - 2x$ and $AC = 0.2x + 4 + \frac{400}{x}$ respectively. If the government imposes a tax of ₹ 22 per unit, find the profit maximising output and price.

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12. If the production function is :

$$z = 20 - x^2 + 10x - 2y^2 + 5y$$

and the prices of x and y are ₹ 2 and ₹ 1 respectively and the selling price is ₹ 5, determine the values of x and y to get maximum profit. Also, find the profit.

13. If ${}^nP_r = 240$ and ${}^nC_r = 120$, find n and r.

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