Reg. No. | | | | | | | | | |

BBABMC 207/BBMBMC 207

Credit Based III Semester B.B.A./B.B.M. Degree Examination, Nov./Dec. 2018
(2012 Scheme)
BUSINESS MATHEMATICS

Time : 3 Hours

Max. Marks : 80

Instructions : *1) Mathematical Tables will be supplied on* ***request****.*
2) ***Use*** *of scientific calculator is* ***not*** *permitted.*

SECTION – A
(one mark each)

1. Answer **any ten** of the following. **(1×10=10)**

a) If $A = \begin{bmatrix} 4 & 1 \\ 2 & x \end{bmatrix}$ and $|A| = 0$ find x.

b) If $A = \begin{bmatrix} 3 & -1 \\ 2 & 8 \end{bmatrix}$ and $B = \begin{bmatrix} -4 & 1 \\ 2 & 3 \end{bmatrix}$ find $2A + 3B$.

c) Find x if 18% of x is 36.

d) Divide ₹ 1,100 amongst A and B in the ratio 3 : 8.

e) Find the 12^{th} term of the series 2, 6, 9, 12, ...

f) Find the common ratio of the series 6, 12, 24, 48, ...

g) The n^{th} term of an A.P. is $2n^2 + 3n$. Find the fourth term.

h) What is the Banker's Discount on a bill of face value ₹ 5,200 which is due after 2 months at 8% p.a. ?

i) A retailer sells an item for ₹ 1,200 after 12% cash discount. What is the list price of the item ?

P.T.O.

j) What is the value of x if $\log_2 x = 4$?

k) Calculate the simple interest on ₹ 14,500 for 262 days at 12% rate p.a.

l) What sum should be invested today so that it becomes ₹ 6,000 after 4 years at 12% compound interest ?

SECTION – B

(5 marks each)

Answer **any five** of the following. **(5×5=25)**

2. If $A = \begin{bmatrix} 4 & 5 & 6 \\ 1 & 2 & 3 \\ 7 & 8 & 9 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 & 2 \\ 2 & 0 & 1 \\ 3 & 2 & 1 \end{bmatrix}$

Find $2A + 3B - 4I$ and $5A + 4B + 3I$.

3. Write all the minors and cofactors of the matrix A, if $A = \begin{bmatrix} 4 & 2 & 1 \\ 7 & 1 & 9 \\ 3 & 3 & 7 \end{bmatrix}$

4. The Marked Price of an article is ₹ 12,000.

Calculate the selling price after 8% Trade discount and 5% cash discount.

5. Solve :

a) $2x^2 - 3x + 1 = 0$

b) $x^2 - 5x + 4 = 0$.

6. The sum of three numbers in Arithmetic Progression is 15 and their product is 120. Find the numbers.

7. Calculate Equated Due Date.

₹ 4,000 drawn on 2 June

₹ 8,000 drawn on 4 July

₹ 7,250 drawn on 7 August

₹ 8,500 drawn on 10 September

8. 8 men each working 10 hours a day can finish a work in 25 days. How many men are required to finish working 12 hours a day in 14 days ?

SECTION – C

(15 marks each)

Answer **any three** of the following. **(3×15=45)**

9. a) Using Cramer's Rule solve :

$X + 2Z = 5$

$X + 2Y = 7$

$X + Y + Z = 6.$ **10**

b) Solve X if $X + \frac{5}{X} = 6$. **5**

10. a) Using Inverse matrix method solve

$X + 2Y + 3Z = 36$

$3x + Y + Z = 16$

$4X + 3Y + 2Z = 34.$ **10**

b) The sum of two numbers is 25 and their product is 100. Find the numbers. **5**

11. a) Two numbers are in the ratio 6 : 11. If 10 is added to each, they are in the ratio 7 : 12. Find the numbers. **5**

b) A person borrowed ₹ 8,000 from a money lender and agreed to pay four installments of ₹ 2,500 quarterly. Find the rate of simple interest charged p.a. by the money lender. **5**

c) A banker paid ₹ 2,600 for a bill of ₹ 2,720 drawn on 12th March at 8 months date. On what day the bill was discounted if the rate of interest is 8% p.a. ? **5**

12. a) Show that $\log\frac{81}{16} - \log\frac{8}{6} + \log\frac{128}{243} = \log^2$. **5**

b) Find the compound interest on a sum of ₹ 7,500 for 2 years at the rate 10% p.a. compounded (1) half-yearly (2) quarterly. **5**

c) Find the amount of an annuity of ₹ 1,500 in 15 years allowing compound interest at 5% p.a. **5**