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**BBMBMC 207**

**Credit Based III Semester B.B.M. Degree Examination, Oct./Nov. 2014  
(New Syllabus) (2012 Scheme)  
BUSINESS MATHEMATICS**

Time : 3 Hours

Max. Marks : 80

- Instructions :** 1) Use of **scientific calculator** is not **permitted**.  
2) **Logarithm** tables will be supplied on request.

**SECTION – A (One mark each)**

1. Answer **any ten** of the following questions :

(1×10=10)

- a) Find the discriminant of the equation  $x^2 - 4x + 4 = 0$ .
- b) If  $A = \begin{bmatrix} 3 & x+5 \\ 0 & 3 \end{bmatrix}$  is a scalar matrix, find x.
- c) Write the adjoint of  $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ .
- d) Find x if  $|A| = 0$ .  $A = \begin{bmatrix} 5 & -1 \\ -2 & x \end{bmatrix}$ .
- e) Find the sum of natural numbers from 1 to 40.
- f) If first term of G. P. is 3 and common ratio is 2, write the fourth term.
- g) Divide 85 in the ratio 2 : 3.
- h) Calculate simple interest on 5,000 ₹ for 3 months and 10 days at 8% rate.
- i) Find x if  $\log_a^x = 0$ .
- j) What sum should be invested today so that it becomes ₹ 8,000 after 2 years at 10% compound interest ?
- k) A bill for ₹ 6,500 was drawn on 7-6-2012 and made payable 5 months after date. Find the legal due date of the bill.
- l) Find the present value of perpetuity due of ₹ 600 at 15% p.a.

P.T.O.



## SECTION – B (5 Marks each)

Answer any five of the following questions :

(5×5=25)

2. A number is divided into three parts 2 : 3 : 4. If the second part is 81 find the other numbers.

3. If  $A = \begin{bmatrix} 2 & 1 \\ 1 & -1 \end{bmatrix}$ ,  $B = \begin{bmatrix} 1 & 5 \\ 7 & 13 \end{bmatrix}$  find the matrix  $A^2 + 2B + 4I$ .

4. A man saved ₹ 800 in the first month, ₹ 900 in the second month, ₹ 1,000 in the third month and so on. Find the amount he saved in 10 years.
5. Find the equated due date of the following bills.  
 ₹ 6,000 due on 12 June  
 ₹ 7,000 due on 24 July  
 ₹ 4,580 due on 17 August  
 ₹ 3,000 due on 20 September.
6. 6 Men earn ₹ 4,800 in 10 days working 8 hours a day, how much will 18 men earn in 7 days working 6 hours a day ?
7. A certain sum at a certain rate of percent per annum simple interest becomes ₹ 1,150 in 3 years. and ₹ 1,250 in 5 years. Find the rate of interest. Calculate the compound interest at the same rate for 5,000 ₹ for 2 years compounded annually.
8. Sum of three numbers in A.P. is 12 and their product is 48. Find the numbers.

## SECTION – C (15 Marks each)

Answer any three questions.

(3×15=45)

9. a) Solve the following equations by Cramer's rule.

$$X + Y + Z = 6$$

$$4X + 3Y + 2Z = 16$$

$$2X + 3Y + Z = 11.$$

10

- b) If the 4<sup>th</sup> and 6<sup>th</sup> terms of A.P. are 13 and 19 respectively find the first term and common difference.

5





10. a) Solve the following equations by matrix inverse method  
 $3X + 2Y + Z = 14$   
 $X + 3Y + 2Z = 11$   
 $2X + 4Y + 3Z = 17$  10
- b) The sum of two numbers is 15 and their difference is 5. Find the numbers. 5
11. a) Find the simple interest on 10,000 ₹ for 2 years at the rate 8%. What will be compound interest at the same rate for 3 years if compounded quarterly? 5
- b) The difference between true and banker's discount on a bill due after 6 months at 8% p.a. is ₹ 40. 5
- Find : 1) True discount  
2) Banker's discount  
3) Face value of the bill.
- c) Ravi deposits ₹ 7,000 in a bank which pays interest compounded quarterly. If bank pays ₹ 8,867 at the end of 2 years find the rate of interest. 5
12. a) Simplify  $\log \left( \frac{21}{17} \right) - \log \left( \frac{21}{13} \right) + \log \left( \frac{17}{13} \right)$ . 5
- b) Find the compound interest on a sum of ₹ 7,000/- for 3 years at the rate of 9% p.a. compounded half-yearly. 5
- c) Calculate the present value of an annuity of ₹ 10,000/- per annum for 6 years, the interest being 5% p.a. compounded annually. 5