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BBMBMC 207

**Credit Based III Semester B.B.M. Degree
Examination, October/November 2016
(2012 Scheme)
BUSINESS MATHEMATICS**

Time : 3 Hours

Max. Marks : 80

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

SECTION – A

(1×10=10)

(1 mark each)

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

a) Solve $3x^2 - 13x + 12 = 0$ by using formula.

b) If $A = \begin{bmatrix} 1 & -2 \\ 2 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 1 \\ -1 & 1 \end{bmatrix}$ then find $A' + B'$.

c) If $\begin{vmatrix} -7 & 3 \\ 1+x & 1 \end{vmatrix} = 5$ find x .

d) Find the seventh term of the G. P. $\frac{5}{2}, \frac{5}{4}, \frac{5}{8}, \dots$

e) A pump takes 3 hrs to lift 2500 lts. of water. What is the time required to lift 1500 lts. of water by the pump ?

f) A retailer sells an item for ₹ 114.40 after giving 12% cash discount what is the list price of the item ?

g) Calculate simple interest on ₹ 15,000 for 3 months and 10 days at 8% rate.

h) A bill of ₹ 5,000 drawn on May 27 at 6 months is discounted on July 7. What is the period of discount ?

P.T.O.



- i) Find x if $\log_x 216 = 3$.
- j) A sum of ₹ 5,000 deposited for 5 years at 13% p.a. What would be the amount?
- k) The difference of two numbers which are in the ratio 8:15 is 14 find the numbers.
- l) Find the present value of perpetuity due of ₹ 6,000 at 15% p.a.

SECTION - B

(5×5=25)

(5 marks each)

Answer **any five** of the following :

2. Write the adjoint matrix of $\begin{bmatrix} 5 & -7 & -3 \\ 6 & 3 & 0 \\ 1 & -1 & 5 \end{bmatrix}$.
3. In an A. P, the 7th and 9th terms are 8 and 24 respectively find the first term and common difference.
4. The monthly salaries of two persons are in the ratio 3:5. If each receives an increment of ₹ 200 ; The ratio becomes 13 : 21. Find their salaries.
5. An article is marked as ₹ 150. A trader allows a discount of 3% and still gains 20% on the cost. Find the cost price of the article.
6. Three bills for ₹ 8,600, ₹ 2,100 and ₹ 9,840 are due respectively on 12th May, 27th May and 21st June. Find the equated due date.
7. If ₹ 8,000 amounts to ₹ 8,820 in 2 years at certain rate of compound interest, find the rate of compound interest.
8. A sinking fund is created by setting aside ₹ 10,000 at the end of every year for 7 years. If the sum invested at 12.5% compound interest per annum, find the amount at the end of the 7th year.



SECTION – C

(15×3=45)

(15 marks each)

Answer **any three** questions :

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

$$2x - 3y + z = 80$$

$$x - 2y - z = 46$$

$$x - 4z = 139.$$

10

b) Find two numbers whose sum is 1550 and the difference is 26.

5

10. a) Solve the following equations by matrix method.

$$2x - 3y = 1$$

$$3x - y = 3.$$

10

b) A clerk in a bank gets starting salary of ₹ 6,500 and every year he gets 10% increment. What is his salary at the end of 4th year and what is his total salary in 4 years ?

5

11. a) 60 men work for 7 days and earn ₹ 50,400. How many men should work for 9 days to earn ₹ 75,600 ?

5

b) At what rate of simple interest will ₹ 80,000 amount to ₹ 83,600 in 9 months ?

5

c) A bill with face value ₹ 3,000 is due after 3 months. It is discounted through a bank at 15% p.a. Calculate true discount Bankers discount and Banker's gain.

5

12. a) Show that $\log \frac{75}{16} - 2 \log \frac{5}{9} + \log \frac{32}{243} = \log 2.$

5

b) If interest is to be compounded half yearly at 10% p.a., in how many years would money triple ?

5

c) A person deposit ₹ 5 lakhs on retirement in a bank. The deposit earns 14% annual interest. How much can he withdraw annually for 15 years ?

5