



I Semester B.B.M. Degree Examination, Nov./Dec. 2017

(Repeaters) (Prior to 12-13)

**BUSINESS MANAGEMENT**

**Paper – 1.6 : Business Mathematics**

Time : 3 Hours

Max. Marks : 100

**Instruction** : Answer should be written in **English** only.

SECTION – A

Answer **any ten** of the following sub-questions. **Each** sub-question carries **two** marks :

(10×2=20)

1. a) Give the meaning of integers with an example.
- b) Give the general form of linear and quadratic equation.

c) If  $A = (4 \ 3 \ 2)$ ,  $B = \begin{pmatrix} 8 \\ 5 \\ 1 \end{pmatrix}$  find  $A^T - B$ .

- d) What is a diagonal matrix ?
- e) What is geometric progression ?
- f) What do you mean by permutations ?
- g) Define a ratio.
- h) Find the compound interest on ₹ 2,000 for 3 years at 5% p.a.
- i) What is direct proportion ?
- j) Give the meaning of an annuity.
- k) Two numbers are in the ratio 5 : 8. If the sum of the numbers is 182. Find the numbers.

l) If  $y = \frac{5}{x^3}$ . Find  $\frac{dy}{dx}$ .





## SECTION - B

Answer **any five** of the following. **Each** question carries **five** marks : **(5×5=25)**

2. Find the HCF and LCM of 20, 30 and 40.
3. Solve for x and y :  $2x + y = 14$  and  $3y = 33 + x$ .
4. Solve :  $\frac{(3x+5)(5x-3)}{x^2+5x+12} = 0$  by formula method.

5. Evaluate : 
$$\begin{vmatrix} 3 & 8 & 6 \\ 9 & 8 & 2 \\ 6 & 12 & 2 \end{vmatrix}$$

6. A man saves ₹ 20 in the first month, ₹ 30 in the second month and ₹ 40 in the third month and so on. Find the total saving in 6 years.
7. For the numbers 4 and 16, Find :
  - a) Arithmetic mean
  - b) Geometric mean.
8. Find simple interest and compound interest on ₹ 5,000 for 5 years @5% p.a. interest chargeable half yearly.

## SECTION - C

Answer **any three** of the following. **Each** question carries **fifteen** marks : **(3×15=45)**

9. a) The sum of 3 numbers in AP is 15 and the product of extremes is 21. Find the numbers.
- b) Fourth term of a GP is 40 and the tenth term is 2560. Find the seventh term.
10. a) If  $A = \begin{pmatrix} 9 & 1 \\ 4 & 3 \end{pmatrix}$ ,  $B = \begin{pmatrix} 1 & 5 \\ 7 & 12 \end{pmatrix}$ . Find matrix X such that  $2A + 5B + 2X = 0$ .

b) Find the inverse of a matrix A, if  $A = \begin{pmatrix} 2 & 3 & 1 \\ 4 & 6 & 3 \\ 6 & 1 & 5 \end{pmatrix}$ .



11. a) A person invests ₹ 200 for 5 years and ₹ 500 for 2 years. The rate of simple interest being the same in both the cases. If he receives altogether ₹ 125 as interest. Find the rate of interest.
- b) On what sum does the difference between SI and CI for 2 years at 4% amounts to ₹ 4 ?
12. a) Find the future value of annuity of ₹ 1,000 for 4 years @ 12% p.a.
- b) Divide ₹ 118 among A, B and C, so that A : B = 3 : 4 and B : C = 5 : 6.
13. a) Find the number of permutations of the letters of the word "MANAGEMENT". In how many of these do the M's come together ?
- b) If  $y = \frac{4x^2 - 2x + 1}{2x^3 + 3x - 1}$ . Find  $\frac{dy}{dx}$ .

## SECTION - D

Answer the following question which carries ten marks :

(1×10=10)

14. a) Solve for x and y using Cramer's rule.

$$x + 2y - 3 = 0$$

$$5x + 4y = 9.$$

- b) Solve for y:  $\frac{y-4}{3} - \frac{y-3}{2} = \frac{3+y}{10} - 2.$
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