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B.Sc. Business Economics (BBE) (2015 to 2017) (Sem.–1)

QUANTITATIVE TECHNIQUES FOR ECONOMICS – I
Subject Code : BBE-103
M.Code : 72693

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :
1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B consists of FOUR Sub-sections : Units-I, II, III & IV.
3. Each Sub-section contains TWO questions each, carrying TEN marks each.
4. Student has to attempt any ONE question from each Sub-section.

SECTION-A

1. Write note on the followings :

   a) Define finite set and null set.

   b) Prove that :

   $$\log 3\left(1-\frac{1}{3}\right)+\log 3\left(1-\frac{1}{4}\right)+\log 3\left(1-\frac{1}{5}\right)+...+\log 3\left(1-\frac{1}{242}\right)=-4$$

   c) If 10th term of an A.P. is 15, and 15th term is 10, find the series.

   d) Evaluate the following :

   $$\begin{vmatrix} 0 & ab2 & ac2 \\ a2b & 0 & bc2 \\ a2c & b2c & 0 \end{vmatrix}$$

   e) What do you understand by amortization of loan?

   f) If $A=\begin{bmatrix} 3 & 2 \\ 4 & 1 \end{bmatrix}$ and $B=\begin{bmatrix} 6.5 & 1.5 \\ 3 & 5 \end{bmatrix}$, compute 3A + 5B.

   g) Find 10th term of the G.P. series -1, 2, -4, 8, ...

h) Discuss intersection and union of two sets.

i) Define simple and compound interest.

j) Define symmetric and skew-symmetric matrix.

SECTION-B

UNIT-I

2. Solve the following :

   a) If $u = v^2 = w^3 = z^4$, then prove that :

   $$\log_u(uvwz) = 1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4}$$

   b) If $a^2 = b^3 = c^5 = d^6$, then prove that :

   $$\log_d(abc) = \frac{31}{5}$$

3. A class has strength of 70 students. Out of it, 30 students have taken Maths and 20 have taken Maths but not Statistics. Find the number of students who have taken Maths and Statistics. How many of them have taken statistics but not Maths?

UNIT-II

4. Find the adjoint and inverse of matrix :

$$\begin{bmatrix} 1 & 0 & -1 \\ 3 & 4 & 5 \\ 0 & -6 & -7 \end{bmatrix}$$

5. Solve the following system of equations using Cramer's rule :

$$x + y + z = 7$$

$$x + 2y + 3z = 16$$

$$x + 3y + 4z = 22$$

UNIT-III

6. The sum of three consecutive terms of an A.P. is 18 and their product is 192. Find the numbers.

7. The 3rd and 5th term of a series in G.P. are 144 and 324. Find the 7th term.

UNIT-IV

8. Rs. 500 received at the end of each of the next 4 years is equivalent in value to how much today, assuming an interest rate of

   a) 12 percent

   b) 20 percent

9. Find the compound interest on Rs. 25,800 for 5 years if the rate of interest be 2% in first year, 2.5% in second year, 3% in the third year and thereafter at 4% p.a.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.