Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MAM - SEMESTER–I • EXAMINATION – WINTER 2013

Subject Code: 4110503 **Date: 18-12-2013**

Subject Name: Business Mathematics

Time: 10:30am – 01:30pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** In a class of 80 students, 30% students study both Mathematics and Statistics. If 47.5% students study only Statistics. Find the percentage of students studying Mathematics only. **07**

(b) 75 men can finish a piece of work in 48 days. How many more men should be engaged to complete the work in 30 days ? **07**

Q.2 **(a)** A television manufacturer fixes the price of a television as Rs. 9800 and earns 20% profit after allowing 10% discount. Find the cost price of the television. **07**

(b) Distinguish between cash discount and trade discount. **07**

OR

(b) A commission agent receives a fixed salary and also a commission at a certain percentage on the sales orders. Let the total remuneration received in two consecutive months be Rs. 2930 and Rs. 3350, and the orders received be Rs. 31000 and Rs. 45000 respectively. Find his salary per month and also the rate of commission. **07**

Q.3 **(a)** A loan of Rs. 12820 is to be repaid in three EMIs. The first being half of the second and one third of the third. The rate of compound interest be 10% per annum payable annually. Find the three EMIs. **07**

(b) Describe the different methods of calculating compound interest. **07**

OR

Q.3 **(a)** The basic salary of an employee is Rs. 15000. He contributes 10% of his basic per month to provident fund. His employer also contributes 8%. If the interest credited to the provident fund account is 6.5% per annum, find the amount of interest after one year. Also, find the total amount. **07**

(b) Distinguish between simple interest and compound interest. **07**

Q.4 **(a)** If $A = \begin{bmatrix} 1 & 2 & 3 \\ 0 & 5 & 7 \\ 6 & 8 & 9 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 0 & 3 \\ 3 & 0 & 5 \\ 5 & 7 & 0 \end{bmatrix}$, find the value of 2A – 3B. **07**

(b) Solve the following system of simultaneous linear equations by elimination method : $3x - 10y = 6$ and $2x + 7y = 45$. **07**

OR

Q.4 **(a)** Explain with examples square matrix, null matrix and unitary matrix. **07**

(b) A father's age is three times the age of his son. After 12 years, the father's age will be twice than that of the son. Find their present ages. **07**

Q.5	**(a)**	Express the number of units q that can be sold as a linear function of price p. 1000 units of a product can be sold at a price of Rs. 5 per unit and 1200 units at a price of Rs. 4.50 per unit.	**07**
	(b)	What is a function ? Explain the different types of functions.	**07**

OR

Q.5	**(a)**	A firm produces a single product and it can market as many units as it is able to produce at a price of Rs. 1.75. Its plant and equipment can produce as many as 5000 units a day. Total fixed cost is Rs. 2000 daily. Unit variable cost is Re. 0.50. How many units per day must be produced in order that the firm breaks even ?	**07**
	(b)	Distinguish between rational and irrational function.	**07**

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