Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MAM - SEMESTER–I • EXAMINATION – SUMMER • 2014

Subject Code: 4110503 **Date: 21-06-2014**

Subject Name: Business Mathematics

Time: 02:30 pm - 05:30 pm **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)** If a, b, c, d are in continued proportion, prove that **07**
$(a^2+b^2+c^2)(b^2+c^2+d^2) = (ab+bc+cd)^2$

(b) The expense of a boarding house is partly fixed and partly varies with the number of boarders. The charge is Rs.70 per head when there are 25 boarders and Rs.60 per head when there are 50 boarders. Find the charge per head when there are 100 boarders. **07**

Q.2 **(a)** A man loses Rs.20 by selling some toys at the rate of Rs.3 per piece and gains Rs.30, if he sells them at Rs.3.25 per piece. Find the numbers of pieces sold by him. **07**

(b) If a commission of 10% is given on the list price, the gain is 20%. Find the gain percent, if the commission is increased to 20%. **07**

OR

(b) Profit after selling an article for Rs.425 is the same as loss after selling it for Rs.355.Find the cost price of the article. **07**

Q.3 **(a)** A person deposits Rs.25000 for 4 years at 12% rate of compound interest. If interest is calculated monthly, find the amount of compound interest. **07**

(b) If Rs.1200 amounts to Rs.1488 after 3 years, find the simple rate of interest. **07**

OR

Q.3 **(a)** A trust deposited some amount as fixed deposit at 10% rate of compound interest with a commercial bank. If the total amount received after 3years is Rs.3, 32,750, finds the amount deposited by the trust. **07**

(b) Explain the concept of EMI with example. **07**

Q.4 **(a)** $\begin{vmatrix} 1 & 1 & 1 \\ bc & ca & ab \\ \frac{1}{a} & \frac{1}{b} & \frac{1}{c} \end{vmatrix}$ Find the Value of it. **07**

(b) Find adj. A and obtain the value of A× (adj. A) **07**

Where $A = \begin{bmatrix} 1 & 0 & 7 \\ 2 & 2 & 5 \\ 0 & 3 & 6 \end{bmatrix}$

OR

Q.4 **(a)** Solve the equations **07**

$x + 2y + 3z = 14$
$2x + y + z = 7$
$5x + 2y + z = 12$

(b) A man buys 8 dozen of mangoes, 10 dozen of apples and 4 dozen of bananas. Mangoes cost Rs.18 per dozen, apples Rs.9 per dozen and banana Rs. 6 per dozen. Represent the quantities bought by row matrix and prices by a column matrix and hence obtain the total cost. **07**

Q.5 **(a)** Define the following. **07**

1. Constant 2.Variable 3. Algebraic function 4.Polynomial function
5. Inverse function.

(b) It is observed that a linear function fits the data points (1000, 17000) and (1500, 22000). Find the linear function and estimate y when x=2000 **07**

OR

Q.5 **(a)** Define function. Discuss about rational and irrational functions. **07**

(b) The demand function for a commodity is $x=10-\frac{p}{4}$. (Assume p represents price and x represents quantity demanded). **07**

(1) Find the quantity demanded if the price is 25
(2) What is the highest price that would be paid for this commodity?
(3) What quantity would be demanded if the commodity were free?

****