Seat No.: _____ Enrolment No._____ GUJARAT TECHNOLOGICAL UNIVERSITY MAM - SEMESTER-I • EXAMINATION – WINTER • 2014 Subject Code: 4110503 Date: 26-12-2014 Subject Name: Business Mathematics

Time: 10:30 am - 01:30 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) Profit of Rs.60, 00, 000 is to be shared among three partners Animesh, Bharat and Chandresh in a business firm such that Animesh should get 30%, Bharat should get 28% and Chandresh should get the remaining profit. How much amount Chandresh is getting more than Animesh and How Animesh is getting more than Bharat.
 - (b) A house is sold for Rs. 54, 00,000. The agent charges 1.75% brokerage from the seller and 1.25% brokerage from the buyer. What is the total brokerage? How much buyer has to pay and how much seller will get?
- Q.2 (a) Distinguish between simple & compound interest. Explain the concept by 07 giving numerical example.
 - (b) If matrices A and B are as given below and 3A + 5B + 2X = O, then find 07 matrix 'X':

$$A = \begin{bmatrix} 9 & 1 \\ 4 & 3 \end{bmatrix} \qquad B = \begin{bmatrix} 1 & 5 \\ 7 & 12 \end{bmatrix}$$

OR

- (b) The difference between the compound interest and simple interest on a certain sum at 10% per annum for 2 years is Rs.631.Find out sum.
- Q.3 (a) A man lent Rs. 72,000 for 5 years and Rs. 76,000 for 4 years to two persons at the same rate(R) of interest. He received RS. 5600 more as interest from one than what he received as interest from the other. What is the rate of interest per annum?
 - (b) You deposit Rs.1000 into an account that earns 5% simple annual interest, and your friend deposits Rs. 1000 into an account that earns 5% interest compounded annually. Copy the following table and calculate the values. Show your work

Years	Simple Interest	Compound Interest	
	Account Balance	Account Balance	
1	?	?	
5	?	?	
10	?	?	
20	?	?	

The used computer was sold at a profit of 25%. If cost price (CP) decreases Q.3 07 (a) by 20% and selling price (SP) increases by Rs. 1000, then the profit is 62.50% (which is double the previous profit), then find the original CP and determine the SP of the item if it is to be sold at a profit of 80%. Define Matrix. Explain the following terms: Null Matrix; Unit Matrix;

(b) Orthogonal Matrix and Rectangular Matrix.

0.4 (a) Solve the following equations using the method of Inverse of Matrix: x + 2y+3z = 14, 3x + y + 2z = 11, 2x + 3y + z = 11

(b) Assume that the fixed cost of setting up a new electronic company is Rs. 2,50,000. The variable cost of production is RS. 75. If selling price of each 07 unit is Rs. 275, then deter mine (i) Cost function, (ii) Revenue function, and (iii) Profit function. Also determine Break-even point (BEP).

OR

Solve the following equations using Matrix Method:

- x + y = 5 and ; x y = 1(a)
- If A, B and C are given matrices, then Find A+2B C07 **(b)** 2 4 3 5 6 3 5 6 07 A = 0 5 6 509 C = 509 B = 4 2 0 2 7 9 4 2 0

A radio manufacturing company produces three model of radio 'say X, Y,

Q.5 (a) and Z. There is an export order of 5000 for model X, 7500 for model Y and 1500 for model Z. The martial and labour (in appropriate units needed to 14 produce each model is given by the following tablet Material Labour

	Material	Labour	
Model X	15	10	
Model Y	16	12	
Model Z	20	15	
 		4 - 1	

Use matrix multiplication to compute the total amount of material and labour needed to fill the entire order.

OR

(a) In the year 1990, a house was appraised for Rs.97, 20,000. By the year 1998 the value had increased to Rs.1, 15, 60, 000. Assume the rate of appreciation is linear.

(a) Find a linear equation in the form y=mx+b that gives the value of the house x years after 1990

(b) What would be the appraised value in 2003?

(b) A baby weighs 9 pounds at birth and 30 pounds at age 3. Write an equation that shows the linear relationship between the weight and age. How much the child will weigh at age 12? Can you make sure to explain the steps as well?

07

07

07