		Subject Code: 4110503 Date: 24 Subject Name: Business Mathematics Time: 02:30 pm - 05:30 pm Total M								05-2016 arks: 70	
ins	nstructions:										
		Attempt al Make suita	able assun	nptions			ecessary				
Q.1	(a)		culated half				ate of interest for Compound Int			07	
Q.1	(b)	Birla Heavy Machinery Pvt. Ltd. purchases a machine for Rs. 450000, the expected life of which is 5 years. After 5 years, a new machine would cost them 20% more. Birla Heavy Machinery Pvt. Ltd. has decided to create a sinking fund and invest them at 12% rate of compound interest. Find amount to be transferred every year to this fund.								07	
Q.2	(a)	The annual income of RAM and LEELA are in the ratio of 4:3 and their expenditure is in the ratio of 3:2. If they each save Rs. 600at the end of a year. Find their annual Income								07	
Q.2	(b)	i.Petrol price per litre increases from 73.81 to 77.43. Find the percentage increase in price.ii.If 19% population of town is 399, find the total population.									
Q.2	(b)	OR What is Ratio, Proportion and percentage? Briefly explain types of each.								07	
Q.3	(a)	Reliance Food Preparations Pvt. Ltd. has to choose the best way of producing three food products. Grill Sandwich (GS), Hot Burger (HB) and Spain Pizza (SP). The amount of each food product by each method as Non – stick (NS), Frozen (FRZN) and Oven (OVEN) is shown in the matrix A.								07	
			NS	GS	HB 8	SP 2		Prof	rit GS		
		Matrix A =	FRZN	5	7	1	Matrix B =	04	НВ		

Enrollment No:

Seat No:

07

07

07

Matrix B represents the profit per unit for these three food products. Find which method is more profitable.

Q.3 (b) What is Matrix? Explain different types of matrices with examples.

OR

What is a determinant? Explain any SIX properties of determinants. 0.3 (a)

IF $A = \begin{bmatrix} 1 & -1 \\ 2 & 0 \end{bmatrix}$, $B = \begin{bmatrix} 0 & 1 \\ 2 & 3 \end{bmatrix}$; $C = \begin{bmatrix} 1 & 1 \\ 3 & 1 \end{bmatrix}$ $D = \begin{bmatrix} 3 & 2 \\ 3 & 1 \end{bmatrix}$ Q.3 (b)

and $(A + B)^2 + (C - D)^2 + E = (A - B)^2 + (C + D)^2$, Find matrix E

- Q.4 a) A shopkeeper earns Rs. 380 in the first week Rs. 660 in the second week and 07 Rs. 860 in the second week. On plotting the points (1,380), (2,660) and (3,860) the shopkeeper feels that a quadratic function may fit the data. Find the quadratic function that fits the data. Also estimate the earning of the fourth week.
- **Q.4** b) The cost of manufacturing 1000 pens is Rs. 17000 and that of manufacturing **07** 1500 pens is Rs. 22000. If the relationship between the number of units produced and its cost is linear, find the relation and also find the cost of manufacturing 2000 pens.

OR

- The expenditure of a hostel depends upon the number of students, When there $\mathbf{Q.4}$ a) 07 are 40 students the expenditure is Rs. 50000 and for 50 students the expenditure is Rs 62000. If the relationship between the number of students and hostel expenditure is linear, find the relationship and also find expenditure when there are 60 students in the hostel.
- **Q.4** b) The fixed cost of a factory producing buckets is Rs. 2500 and the variable cost **07** per bucket is Rs. 11. The tax on each bucket is Re. 1 and the selling price per bucket is Rs. 22. Find the number of buckets to be produced for no profit – no loss. If 300 buckets are produced, find the profit. If the loss is Rs. 500, find the number of buckets produced.
- Q.5 a) The Capital of a firm is Rs. 3,00,000.

Its annual sales is Rs. 2,60,000.

The Cost of production is 55% of Selling Price.

Expenses on advertisement 1.5% of Sales.

Salary of workers Rs. 53000.

Rent and other miscellaneous expenditure Rs. 18600 and

Sales tax 2%. Find the percentage gain on capital.

If on doubling the advertising expenses the sales increases by 12% and then find the new gain percentage.

- Q.5 b) i) Rajnikant earns 25% gain on cost price of an article. Find the profit with **04** reference to the selling price.
 - ii) John bought a watch for Rs. 240 and sold it for Rs. 276. Find his profit 03 and profit percentage.

07

- Q.5 a) On selling 180 tin oil @ Rs. 37.40 per litre, an oil trader earns a profit of Rs. 9486. He had sold the whole oil @ Rs. 32.80 per litre, he would have suffered a loss of Rs. 3348. Find the cost price of oil per litre, Also find the quantity of oil per tin.
- Q.5 b) i) Bombay Dyeing allows 15% discount on the cloth purchased. Amir Khan purchases cloth worth Rs. 2580. How much money will he pay?
 - ii) Rakesh Roshan purchases a washing machine priced Rs. 9850 for Rs. 03 9062. Calculate the rate of discount.
