

**GUJARAT TECHNOLOGICAL UNIVERSITY****MBA (Integrated) – SEMESTER – 1 • EXAMINATION – WINTER - 2018****Subject Code: 2517103****Date: 27/12/2018****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)**  $A = \begin{bmatrix} 2 & 1 & 0 \\ 3 & 2 & -1 \\ 4 & 1 & -2 \end{bmatrix}$  Find  $A^{-1}$  **07**

**(b)** Explain Properties of Determinants. **07**

**Q.2 (a)** Use Cramer's Rule To Solve **07**  
 $2x + 3y + 4z = 29$   
 $x + y + 2z = 13$   
 $3x + 2y + z = 16$

**(b)** Explain different types of Matrices. **07**

**OR**

**(b)** Mr. X invested Rs 20,000 in Unit Trust of India for 5 years. He received after 5 years Rs 29,000. What must be the rate of Simple Interest ? **07**

**Q.3 (a)** An agent sold in a week three scooters of three different manufacturers for Rs 30,000 , Rs 42,000 and Rs 48,000 respectively. The rate of commission was 15% on 1<sup>st</sup> , 10% on third scooter. On the whole the agent got a commission of 11.95%. Find his commission on 2<sup>nd</sup> scooter and total commission. **07**

**(b)** Explain AP , GP and HP. **07**

**OR**

**Q.3 (a)** If  $y$  is the mean proportional between  $x$  and  $z$ , then Prove that **07**  
 $(X^2 - y^2 + z^2) / (X^2 - y^2 + z^2) = y^4$

**(b)** A book seller purchase 600 copies of text books for Rs 48000 during the year he could sell 450 copies at a profit of 30% and the remain copies which publisher did not take back were disposed off at the loss of 25%. Find the net profit or loss % of the shop keeper in this transaction. **07**

**Q.4 (a)** If  $a, b > 0$  , Show that  $(a^3 + b^3) : (a^2 + b^2)$  is greater than  $(a^2 + b^2) : (a + b)$  **07**

**(b)** Explain third proportional and fourth proportional with example. **07**

**OR**

**Q.4 (a)** Find the two number such that the mean proportional between them is 28 and the third proportional to them is 224. **07**

**(b)** Explain different types of Ratio. **07**

**Q.5 (a)** Explain different types of Function. **07**

**(b)** Solve : **07**

$$\lim_{x \rightarrow \infty} \frac{4x^3 - 2x^2 + 1}{3x^3 - 5}$$

**OR**

**Q.5 (a)**  $\lim_{z \rightarrow 1} \frac{6 - 3z + 10z^2}{-2z^4 + 7z^3 + 1}$  **07**

Solve :

**(b)** Explain Trade Discount and Cash Discount with example. **07**