Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma Sem-I [Commercial Practice] Semester examination January 2009
Subject code: 310008
Subject Name: Business Mathematics

Date: 12 /01 / 2009 **Time: 11:00am-1:30pm**
Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Use of simple calculator and log table are allowed.**

Q-1. **(14)**

I. Define the term 'function' explain types of the 'function'.

II. (a). If $f(x) = 3x^2 - 5x + 1$ find f (2) and f (-2)

(b). If $f(x) = \dfrac{x^2 + 1}{x^2 - x + 1}$ Find f (1) and f (-3)

III. find $\lim\limits_{x \to 1} \dfrac{x^3 - 5x^2 + 2x + 2}{x^3 + 2x^2 - 6x + 3}$

IV find $\dfrac{dy}{dx}$ for the following.

$y = x^3 + x + \dfrac{1}{x} + \dfrac{1}{x^3}, x \neq 0$

Q-2 (a) Draw the graph of the following inequality. **(7)**

$2y - 5x + 4 \geq 0$

(b) Attempt **any two** of the following. **(7)**

i. Draw the graph of the following inequality.

$2x + 3Y \leq 12$

ii. Draw the graph of the following inequality.

$2x - Y > 3$

iii. In an arithmetic series of 2, 1/2 , -1 , - 5/2 find the value of 35th term.

Q-3 (a) How many number of three digits of even number can be formed by making use of 2, 4, 5, 6, 7 ? **(6)**

(b) In a family there are 3 male, 4 female and 5 children. How many ways a group of Five can be formed with 2 female, 2 children and 1 male? **(5)**

(c) In an arithmetic series of 0.2, 0.9, 1.6, 2.3 find sum of first 20 terms. **(3)**

OR

Q-3 (a) How many number of three digits of odd number can be formed by making use of 1, 3, 4, 5, 6 ? **(6)**

(b) Obtain the rank of "JIGAR" in the alphabetic dictionary. **(5)**

(c) Find sum of first 20 terms of 5, 7, 9, 11 - - - series. **(3)**

Q-4 There are two section A and B in the paper of maths. A student is expected to answer, in all, at the most 10 questions from both the sections. Taking at least 2 from section A and at least 3 from section B.

A student is also expected to spend, on average, 12 minutes of time to answer each question of section A and 18 minutes of time to answers each question of section B. The question paper is of 3 hours duration.

Each question in section A carries 5 marks where as each question in section B carries 8 marks. How many questions from each section should be answered to get maximum possible marks ? How many will be this maximum marks? **(14)**

OR

Q-4. Shri Raj Traders has a wholesale business of wheat and rice. The firm has experienced that the daily sale of wheat and rice, is ordinarily not more than 12 bags. The sale of wheat is at least 1 bag more than that of rice.
The profit on sale of 1 bag of rice is Rs. 150 and on 1 bag of wheat is Rs. 80. A How many bags of each rice and wheat should the firm sell in a day to earn maximum profit? **(14)**

Q-5. (a) A bill of Rs. 42000 maturing after 7 months was discounted at 15%after 1 month. Find out banker's discount, true discount and banker's gain. **(7)**

(b) A salesman is paid a fixed monthly salary plus commission based as a percentage on sales. If on the sales of Rs. 17100 and Rs. 21700 in two successive months, he receives in all Rs. 1130 and Rs. 1360 respectively. Find the amount of monthly salary and the rate of commission paid on sales. **(7)**

OR

Q-5 (a) Ronak discounts a bill of Rs. 10600 for 10 months at 12% before 6 months of its maturity. Find out bankers gain? **(7)**
(b) Insert eleven arithmatic means between 500 and 1700. **(7)**