Seat No.: _____ Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

Pharm D – 1st Year • EXAMINATION – SUMMER - 2018

Subject Code: 818807 **Date: 01/06/2018**

Subject Name: Remedial mathematics

Time: 10:30am TO 01:30pm **Total Marks: 70**

Instructions:

1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** Given A(2,4) , B(6,8), C(a+4, 2a + b) and $\overline{CA} \perp BC$, find a. **06**

(b) Expand by SARRUS RULE $\begin{pmatrix} 3 & 4 & 1 \\ 2 & 0 & 7 \\ 1 & -3 & -2 \end{pmatrix}$ **04**

(c) If $\cos\theta + \sin\theta = \sqrt{2}\cos\theta$, show that $\cos\theta - \sin\theta = \sqrt{2}\sin\theta$ **04**

Q.2 **(a)** Solve the following simultaneous quations using cramer's rule. **06**
x+ y+z =4, 2x-3y+4z=33, 3x-2y-2z=2.

(b) Prove that $\frac{\cos 5x+\cos 3x}{\sin 5x-\sin 3x} = \cot x$ **04**

(c) Show that points (1, 1), (2,3) and (3,5) are collinear. **04**

Q.3 **(a)** Using theorems prove that $\begin{bmatrix} x & y & z \\ x^2 & y^2 & z^2 \\ x^3 & y^3 & z^3 \end{bmatrix}$ = xyz(x-y)(y-z)(z-x) **06**

(b) Evaluate $\lim_{x\to\infty} \frac{x^2-x+3}{2x^3+1}$ **04**

(c) Prove that sin10° sin 30° sin50° sin70° = 1/16. **04**

Q.4 **(a)** Solve the differential equation: **06**
$xy\frac{dy}{dx} = y+2$ if y(1) = 1.

(b) Solve $(xy^2 + x)\,dx + (yx^2+y)\,dy = 0$. **04**

(c) Solve the following differential equation **04**
$(1+x^3)\,dy = x^2y\,dx$

Q.5 **(a)** If $y = \frac{x-\cos x}{x+\cos x}$, find $\frac{dy}{dx}$. **06**

(b) Solve: $2xy\frac{dy}{dx} = x^2 + 3y^2$ **04**

(c) Evaluate $\lim_{x\to 0}(1+2x)^{1/x}$ **04**

Q. 6 **(a)** Solve the following differential equation: **06**
$\frac{dy}{dx} = \frac{2x(\log x+1)}{\sin y + y\cos y}$

(b) Evaluate: $\int \sin^3 x \cos^4 x\,dx$ **04**

(c) Solve : $L^{-1}\left(\frac{s+4}{s^2+4s+8}\right)$ **04**

Q.7 **(a)** Evaluate: $\int \frac{2x}{x^2-7x+12}\,dx$ **06**

(b) Find the Laplace transform of $\cos^3 2t$. **04**

(c) Evaluate: $\int_0^{\frac{\pi}{2}} \sin^2 x\,dx$. **04**