Code No: PHR16112 **R16** SET - 1

**I B. Pharmacy I Semester Supplementary Examinations, May - 2017**
**REMEDIAL MATHEMATICS-I**

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is Compulsory
3. Answer any **FOUR** Questions from **Part-B**

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## PART –A

1. a) Find x if $\begin{bmatrix} 1 & 2 & x \\ 5 & 7 & 9 \\ 1 & 2 & 3 \end{bmatrix}$ is a singular matrix. (2M)

b) Find the value of $\cos^2 45^0 - \sin 15^0$. (2M)

c) Find the distance between parallel straight lines 3x+4y-3=0 and 6x+8y-1=0. (2M)

d) Find $\lim_{x \to o}\left(\frac{\sqrt{1+x}-1}{x}\right)$ (2M)

e) Show that $\int_0^{\pi} xf(\sin x)dx = \frac{\pi}{2}\int_0^{\pi} f(\sin x)dx$ (2M)

f) Find Laplace transformation of $\sin(wt+\alpha)$ (2M)

g) If $A = \begin{bmatrix} 2 & 0 \\ 3 & -5 \end{bmatrix}$ then show that $A^2 - 4A - I = 0$ (2M)

## PART –B

2. a) Solve the following equation *x+y+4z = 6, 3x+2y-2z=9, 5x+y+2z=13* by using Cramer's Rule. (7M)

b) Resolve $\frac{1}{(x-1)(x-2)(x-3)}$ into partial fractions. (7M)

3. a) If A+B+C=$180^0$, prove that the following $\sum \tan\frac{A}{2}\tan\frac{B}{2} = 1$ if A, B, C are positive. (7M)

b) From the top of a hill 200meters high, the angles of depression of the top and bottom of a pillar on the level ground are $30^0$and $60^0$ respectively. Find the height of the pillar. (7M)

4. a) A (2,3) and B(-3,4) be two given points. Find the equation of the locus of 'p' so that the area of the triangle PAB is 8.5 sq.units. (7M)

b) Transform the equation 5x-2y-7=0 into (i) slope- intercept form (ii) intercept form and (iii) normal form. (7M)





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5. a) If $x = a(t - \sin t), y = a(1 + \cos t)$ find $\frac{dy}{dx}$ (7M)

   b) If $f(x) = \frac{1}{x^2 + 1} (x \in R)$, prove that 'f' is differentiable on R and find $f'(x)$ (7M)

6. a) Evaluate $\int_0^{\pi/2} log\ (sin\theta) cos\theta d\theta$. (7M)

   b) Evaluate $\int \left(x(sin\ x\ cos\ x) + \left(x^2 e^{2n}\right)\right) dx$ (7M)

7. a) Find the differential equations of the following family of curve is (7M)
   $y = ae^x + be^{2x} + ce^{-3x}$

   b) Solve $x^2 ydx - (x^3 + y^3)dy = 0$ (7M)