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

I B. Pharmacy I Semester Supplementary Examinations, Jan/Feb - 2018
REMEDIAL MATHEMATICS-I

Time: 3 hours Max. Marks: 70

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

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PART –A

1. a) If $\begin{bmatrix} x-3 & 2y-8 \\ z+2 & 6 \end{bmatrix} = \begin{bmatrix} 5 & 2 \\ -2 & a-4 \end{bmatrix}$, then find x, y, z, a. (2M)

b) Find the value of $tan20 + tan25 + tan20\ tan25$. (2M)

c) What is the angle between the lines $x + y + 1 = 0$ and $x = 5$? (2M)

d) Find $\underset{x \to 2}{Lt} \frac{x^2(x^2-4)}{x-2}$ (2M)

e) Evaluate $\int \frac{2x^3-3x+5}{2x^2}\, dx$ for $x > 0$. (2M)

f) Find Laplace transform of $(1 + t^2)^2$. (2M)

g) If $\begin{bmatrix} 4 & 2 \\ -1 & 1 \end{bmatrix}$ then show that (A-2I) (A-3I) = 0. (2M)

PART –B

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

b) Solve the system of equations $2x + y - z = 1, x - y + z = 2, 5x + 5y - 4z = 3$ by Cramer's rule. (7M)

3. a) A person walking 20 mts towards a chimney in a horizontal line through its base observes that its angle of elevation changes from 30° to 45°. Find the height of the Chimney. (7M)

b) In a triangle ABC, prove that $\sum \frac{\cos(B-C)}{\sin B \sin C} = 4$. (7M)

4. a) Find the point on the straight line 3x + y +4 =0 which is equidistance from the points (-5,6) and (3,2). (7M)

b) Transform the equation $\frac{x}{a} + \frac{y}{b} = 1$ into normal form where $a > 0$ and $b > 0$. If perpendicular distance of the straight line from the origin is p. Deduce $\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$. (7M)
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5. a) If $y = x^{tanx} + (sinx)^{cosx}$ find $\frac{dy}{dx}$ (7M)

b) Find the derivative of $tan^{-1}\left[\frac{3a^2x-x^3}{a(a^2-3x^2)}\right]$ (7M)

6. a) Evaluate $\int \frac{2x+4}{x(x^2+4)}\, dx$ (7M)

b) Evaluate $\int_0^{\pi} \frac{\text{xsinx}}{1+sinx} dx$ (7M)

7. a) Form the differential equation corresponding to the family of circles of radius r given by $(x-a)^2 + (y-b)^2 = r^2$ where a, b are parameters . (7M)

b) Solve $sin^2x \frac{dy}{dx} + y = cotx$ (7M)