

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**

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 $\tan 20^\circ + \tan 25^\circ + \tan 20^\circ \tan 25^\circ$. (2M)
- c) What is the angle between the lines $x + y + 1 = 0$ and $x = 5$? (2M)
- d) Find $\lim_{x \rightarrow 2} \frac{x^2(x^2-4)}{x-2}$ (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 $y = x^{\tan x} + (\sin x)^{\cos x}$ 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 $\int_0^{\pi} \frac{x \sin x}{1 + \sin x} dx$ (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 $\sin^2 x \frac{dy}{dx} + y = \cot x$ (7M)