

Subject Code: B13102/R13

I B. Pharmacy I Semester Regular Examinations Feb. - 2014

REMEDIAL MATHEMATICS-I

Time: 3 hours

Max. Marks: 70

Question Paper Consists of **Part-A** and **Part-B**
Answering the question in **Part-A** is Compulsory,
Three Questions should be answered from **Part-B**

PART-A

- 1.(i) Two men on the same side of a building notice that the angles of elevation to the top of the building are 30° and 60° respectively. If the height of the building is known to be 80 m, find the distance between the two men.
- (ii) Find the equation of straight line passing through (1,1) and perpendicular to the line passing through the points (3,5) and (-6,-2).
- (iii) Find the area bounded by the curve $x^2 = 4y$ and the straight line $x = 4y - 2$.
- (iv) $f(x) = \begin{cases} x-1, & \text{if } 0 < x < 2 \\ 0 & \text{if } x = 2 \\ x^2 - 4 & \text{if } x > 2 \end{cases}$. Check the continuity of the function at $x = 2$.
- (v) Form the differential equation from the relation $y = ax + bx^2$.
- (vi) Find the term independent of x in the expansion of $(x^2 - \frac{1}{x})^9$.

[4+4+4+4+3+3]

PART -B

- 2.(a) The fourth term of a geometric progression exceeds the second term by 24 and the sum of second and third term is 6. Find the progression.
- (b) If $\sin \alpha = \frac{3}{5}$, $\cos \beta = \frac{9}{41}$, find the value of $\sin(\alpha - \beta)$ and $\sin(\alpha + \beta)$.
[8+8]
- 3.(a) Prove that $\cos \frac{\pi}{9} \cdot \cos \frac{2\pi}{9} \cdot \cos \frac{3\pi}{9} \cdot \cos \frac{4\pi}{9} = \frac{1}{2^4}$.
- (b) Solve the system of equations by Cramer's rule: $x-y+z=4$; $2x+3y+3z=5$ and $3x-2y+z=7$.
[8+8]
- 4.(a) Find the area of a triangle formed by the points (1,2), (3,-4) and (-2,0).
- (b) Find the derivative of $x^2 \operatorname{cosec} x$.
[8+8]
- 5.(a) Find $\lim_{x \rightarrow 0} \frac{\sin(x^2)}{x \sin x}$
- (b) Find the angle between the lines $3x-5y+7=0$ and $2x-y+4=0$.
[8+8]
- 6.(a) Solve $xy' + y + 4 = 0$.
- (b) Evaluate $\int_0^{\frac{\pi}{4}} \frac{e^{\tan x}}{\cos^2 x} dx$.
[8+8]
- 7.(a) Evaluate $\int x \cos^2 x dx$.
- (b) Solve $(x+1) \frac{dy}{dy} + 1 = 2e^{-y}$.
[8+8]