**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**
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## 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 $30^o$ and $60^o$ 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) $f(x) = \begin{cases} x-1, & if \quad 0 < x < 2 \\ 0 & if \quad x = 2 \\ x^2 - 4 & if \quad x > 2 \end{cases}$. 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 $sin \propto = \frac{3}{5}$, $cos\beta = \frac{9}{41}$, find the value of $\sin(\alpha - \beta)$ $and$ $\sin(\alpha + \beta)$.

[8+8]

3.(a) Prove that $cos\frac{\pi}{9}.cos\frac{2\pi}{9}.cos\frac{3\pi}{9}.cos\frac{4\pi}{9} = \frac{1}{2^4}$.

(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 $x^2 cosec\, x$.

[8+8]

5.(a) Find $\lim_{x \to 0} \frac{\sin(x^2)}{x \sin x}$

(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 $\int_0^{\frac{\pi}{4}} \frac{e^{tanx}}{cos^2 x}\, dx$.

[8+8]

7.(a) Evaluate $\int x cos^2 x\, dx$.

(b) Solve $(x+1)\frac{dy}{dy} + 1 = 2e^{-y}$.

[8+8]