

Code: 15R00101

R15

B.Pharm I Year I Semester (R15) Regular & Supplementary Examinations January 2017

REMEDIAL MATHEMATICS

Time: 3 hours

Max. Marks: 70

PART – A
 (Compulsory Question)

1 Answer the following: (10 X 02 = 20 Marks)

 (a) The sum of p terms of A.P is $p^2 + 4p$, find the n^{th} term.

(b) Evaluate:

$$\sum_{k=1}^{11} (2 + 3^k)$$

 (c) If $\sec \theta = x + \frac{1}{4x}$ show that $\sec \theta + \tan \theta = 2x$.

 (d) Show that $\cos^2 48^\circ - \sin^2 12^\circ = \frac{\sqrt{5+1}}{8}$.

 (e) Find the distance between the two parallel line $3x + 4y + 3 = 0, 3x + 4y + 7 = 0$.

 (f) Write the parametric equations of the straight line passing through (1,2) and having inclination 60° .

 (g) Find the value of $\lim_{x \rightarrow 0} \frac{\sin bx}{x \cos x}$.

 (h) Find the derivative of the function $y = e^x + x^n + 5 \log x$.

 (i) Solve $x dy = y dx$.

 (j) Find the value of $L(\cos^2 2t)$.

PART – B
 (Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 The sum of the three numbers in a geometric progression is 7 and the sum of their square is 21. Find the geometric progression.

OR

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

UNIT – II

 4 Prove that $(\sin x - \cos x)^4 + 6(\sin x + \cos x)^2 + 4(\sin^6 x + \cos^6 x) = 13$.

OR

 5 If x, y, z are cyclic, show that $\frac{x-y}{1+xy} = \pi \left(\frac{x-y}{1+xy} \right)$.

UNIT – III

 6 Find the equation of the straight line passing through the point of intersection of lines $x + 3y - 1 = 0$, $x - 2y + 4 = 0$ and perpendicular to $2x + 3y = 0$.

OR

7 Find the circumcentre of the triangle formed by the points (1,3), (0,-2), (-3,1).

UNIT – IV

 8 If $u = \cos^{-1} \left(\frac{x+y}{\sqrt{x}+\sqrt{y}} \right)$ then show that $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = \frac{-1}{2} \cot u$.

OR

 9 Evaluate $\int \frac{1}{1+x^3} dx$.

UNIT – V

 10 Solve $\sqrt{1+x^2+y^2+x^2y^2} + xy \frac{dy}{dx} = 0$.

OR

 11 (a) Find the Laplace transform of $t^2 \sin at$.

 (b) Evaluate $\int_0^\infty t e^{-2t} \sin 3t dt$.