

B.Pharm I Year (R13) Supplementary Examinations December 2016

REMEDIAL MATHEMATICS

Time: 3 hours

Max. Marks: 70

PART – A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- Find the quadratic equation whose roots are $3 + \sqrt{2}$, $3 - \sqrt{2}$.
 - Find the quadratic form from the following equation $\sqrt{2x+3} - \sqrt{x-2} = 2$.
 - Show that $\cos^2 45^\circ + \cos^2 135^\circ + \cos^2 225^\circ + \cos^2 315^\circ = 2$.
 - Prove that $\tan 3A = \frac{3\tan A - \tan^3 A}{1 - 3\tan^2 A}$
 - Show that points $(4, -2)$, $(2, -4)$, $(7, 1)$ are collinear.
 - Find the points which divide the line segment joining $A(1, -3)$ and $B(-3, 9)$ in the ratio 1:3 externally.
 - Evaluate $\lim_{x \rightarrow 1} \frac{2x+1}{3x^2-4x+5}$.
 - Find the first derivative of the equation $y = 2x^2 + 5x + 7$.
 - Define degree of differential equation and give one example.
 - Show that $L(t) = \frac{1}{s^2}$.

PART – B

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

UNIT - I

- 2 Solve the equations $2x + y - z = 1$, $x - y + z = 2$, $5x + 5y - 4z = 3$ by Cramer's rule.

OR

- 3 Write the applications of logarithms in pharmaceutical computations.

UNIT - II

- 4 Prove that $\frac{\sec 8A - 1}{\sec 4A - 1} = \frac{\tan 8A}{\tan 2A}$.

OR

- 5 Show that $4\sin \frac{5\theta}{2} \cdot \cos \frac{3\theta}{2} \cdot \cos 3\theta = \sin \theta - \sin 2\theta + \sin 4\theta + \sin 7\theta$.

UNIT - III

- Find the equation of the line parallel to y-axis and passing through $(-7, -11)$.
- Find the equation of the line perpendicular to y-axis and passing through $(5, 6)$.

OR

- 7 Find the angles of the triangle whose sides are $x + y - 4 = 0$, $2x + y - 6 = 0$ and $5x + 3y - 15 = 0$.

UNIT - IV

- Find d^2y/dx^2 when $5x^2 + 2hxy + 4y^2 + 2gx + 4fy = 0$.
- Evaluate $\int \sec^3 x \, dx$.

OR

- Find the first and second partial derivatives of $Z = x^4 + y^3 + 4cxy$.
- Evaluate $\int_0^1 K x e^x \, dx$.

UNIT - V

- 10 Solve $\frac{dy}{dx} = (4x + y + 1)^2$.

OR

- 11 Find the Laplace transform of:

(a) $\frac{e^{-at} - 1}{a}$.

(b) $\sin 2t \cos t$.

(c) $e^{4t} \sin 2t \cos t$.