Subject Code: B13102/R13

I B. Pharmacy I Semester Regular/Supplementary Examinations Feb. - 2015

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.(a) Find the no of permutations that can be made using the letters of the word 'ALGEBRA'.

(b) Simplify $\sin(45^0 + A)\sin(45^0 - A)$.

(c) Find the centroid if the triangle whose vertices are (3, 1), (-5, 2) and (-1, 6).

(d) Find $\lim\limits_{x \to 0} \dfrac{\tan(\sin x)}{x}$.

(e) Evaluate $\int \dfrac{\log x.\log(\log x)}{x} dx$.

(f) Solve $y' + 2xy = e^{-x^2}$. [3+4+4+3+4+4]

PART–B

2.(a) The 4th term of a geometric progression exceeds the second term by 24 and the sum of the 2nd and 3rd term is 6. Find the progression.

(b) Find the value of $\tan 75^0 - \cot 75^0$.

[8+8]

3.(a) Solve the system of equations $x + y + z = 8;\ 2x + 3y + 2z = 19$ and $4x + 2y + 3z = 23$, using Crammer's rule

(b) The angle of elevation of the top of a tower from a point on the same level as the foot of the tower is 15^0. On moving 100 m towards the tower, the angle of elevation increases to 30^0. Find the height of the tower.

[8+8]

4.(a) For what values of 'x', the area of the triangular region enclosed by the segments joining the points (3, 4), (x, -1) and (4, -6) will be 7.5 sq. units.

(b) If $f(x) = \begin{cases} 0, & when\ \ x^2 > 1 \\ 1, & when\ \ x^2 < 1 \\ \frac{1}{2}, & when\ \ x = 1 \end{cases}$. Find whether $f(x)$ is continuous at x = 1 and x = –1

[8+8]

5.(a) Find the equation of the straight line passing through (1, 1) and perpendicular to the line passing through (3, 5) and (–6, –2).

(b) Find the derivation of $\frac{e^x x^2}{\log x}$.

[8+8]

6.(a) Evaluate $\int_0^{\pi/2} \log(\tan x)dx$.

(b) Find the differential equation from the equation $y = Ax^3 + Bx^2$.

[8+8]

7.(a) Find the area lying between the curves $y = x^2$ and the straight lines y = 0, x = 1 and x = 2.

(b) Solve $\frac{dy}{dx} = \frac{x-y}{x+y}$.

[8+8]