

I B. Pharmacy I Semester Supplementary Examinations, February - 2020
REMEDIAL MATHEMATICS-I

Time: 3 hours

Max. Marks: 70

- Note: 1. Question paper consists of two parts (**Part-A** and **Part-B**)
 2. Answering the question in **Part-A** is Compulsory
 3. Answer any **THREE** Questions from **Part-B**

PART -A

1. a) Find the number of four letter words that can be formed using the letters of the word MIXTURE which (i) contain the letter X (ii) do not contain the letter X. (4M)
- b) Find the value of $\tan 75^\circ - \cot 75^\circ$ (4M)
- c) Show that the set of points $(1, 3), (-2, -6), (2, 6)$ are collinear. (4M)
- d) Find the derivative of $\cos(x^2)$ (3M)
- e) Find Laplace transform of $\sin at$. (3M)
- f) Evaluate $\int \cot x dx$ (4M)

PART -B

2. a) Find the term independent of x in the expansion of $\left(4x^3 + \frac{7}{x^2}\right)^{17}$ (8M)
- b) show that $\begin{vmatrix} bc & b+c & 1 \\ ac & a+c & 1 \\ ab & b+a & 1 \end{vmatrix} = (a-b)(b-c)(c-a)$ (8M)
3. a) From a point on the ground, the angle of elevation of summit is found to be 45° . After walking 150 mt towards the mountain, the angle of elevation of the summit is 60° . Find the height of the mountain. (8M)
- b) Prove that $\frac{\sin A + \sin 5A + \sin 9A}{\cos A + \cos 5A + \cos 9A} = \tan 5A$ (8M)
4. a) Find the equation of the locus of a point which is equidistant from the A(-3,2) and B (0,4) (8M)
- b) Transform the equation $5x - 2y - 7 = 0$ into (8M)
 - (i) Slope - Intercept form
 - (ii) Intercept form
 - (iii) Normal form
5. a) Check the continuity at $x = 3$ given by (8M)

$$f(x) = \begin{cases} \frac{x^2 - 9}{x^2 - 2x - 3} & \text{if } x \neq 3 \\ 1.5 & \text{if } x = 3 \end{cases}$$

6. a) Evaluate $\int e^{2x} \cos 2x dx$ (8M)
- b) Find the area of the curve $y = (a^2 - x^2)^2$ between $x=0, x=a$ (8M)
7. a) Form a ODE by eliminating the constants 'c' from $y = 1 + x^2 + c\sqrt{1+x^2}$ (8M)
- b) Solve the ODE $y dx - x dy + 3x^2 y^2 e^{x^3} dx = 0$ (8M)

