BRAINWARE UNIVERSITY

Term End Examination 2019 – 20

Programme – Bachelor of Pharmacy

Course Name: Remedial Mathematics

Course Code – BP106RMT

(Semester – 1)

Time allotted: 1 Hour 30 Minutes **Full Marks: 35**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group –A

(Short Answer Type Questions) 5 x 5 = 25

Answer any *five* from the following

1. If $\frac{\log x}{b-c}=\frac{\log y}{c-a}=\frac{\log z}{a-b}$, then prove that $x^{b^2+bc+c^2}.y^{c^2+ac+a^2}.z^{a^2+ab+b^2}=1$. 5

2. Evaluate the limit : $\lim_{x\to 1}\frac{x^2-1}{\sqrt{5x-1}-\sqrt{3x+1}}$. 5

3. Let $f(x)=\frac{x^2-1}{x^3-1}$, x ≠ 1.What should be the value of $f(x)$ at x=1 such that $f(x)$ be continuous at x=1? 5

4. If $A=\begin{pmatrix}2 & -3 & -5\\ -1 & 4 & 5\\ 1 & -3 & -4\end{pmatrix}$, $B=\begin{pmatrix}-1 & 3 & 5\\ 1 & -3 & -5\\ -1 & 3 & 5\end{pmatrix}$ and $C=\begin{pmatrix}2 & -2 & 4\\ -1 & 3 & 4\\ 1 & -2 & -3\end{pmatrix}$, verify 5

A+(B-C)=(A+B)-C 5

5. Find the equation of the straight line passing through the point $(-3,4)$ and parallel to the straight line $2x-3y-5=0$. 5

6. Find the value of $\int\frac{dx}{1-\sin x}$. 5

7. Solve the first order differential equation : $\frac{dy}{dx}+\frac{1}{x}y=\sin x$ 5

Group – B

(Long Answer Type Questions) 1 x 10 = 10

Answer any *one* from the following

8. (a) Prove that $\begin{pmatrix} 6 & -2 & -3 \\ -1 & 1 & 0 \\ -1 & 0 & 1 \end{pmatrix}$ is an inverse of the matrix $\begin{pmatrix} 1 & 2 & 3 \\ 1 & 3 & 3 \\ 1 & 2 & 4 \end{pmatrix}$. 5

(b) Prove that any square matrix can be uniquely expressed as the sum of a symmetric and a skew-symmetric matrix. 5

9. (a) Verify Cayley Hamilton theorem for the matrix $A = \begin{pmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{pmatrix}$. 7

Hence find A^{-1}.

(b) Evaluate $\lim_{x \to 0} \frac{e^{3x} - e^{-2x}}{x}$. 3
