

Code No. 1063

FACULTY
B. Pharmacy I – Year (Suppl.) Examination, November 2017
Subject: Mathematics
Time: 3 Hrs
Max.Marks: 70
Note: Answer all questions. All questions carry equal marks.

1 a) i) Prove that $2 \log \frac{3}{5} + 3 \log \frac{5}{7} + 2 \log \frac{7}{3} = \log \frac{5}{7}$.

ii) If $\frac{\log a}{1} = \frac{\log b}{2} = \frac{\log c}{5}$ find the value of $\frac{a^4 b^3}{c^2}$.

OR

b) i) If $\tan A = \frac{1}{2}$ and $\tan B = \frac{1}{3}$ find the value of $A + B$.

ii) Show that $\sin A \cdot \sin (60 + A) \sin (60 - A) = \frac{1}{4} \sin 3A$.

2 a) a) i) Find the derivative of $\sin x$ using first principle.

ii) Find all points of maxima and minima of $f(x) = 2x^3 - 21x^2 + 36x - 20$.

OR

b) i) If $u = \sin^{-1} \left(\frac{x^2 + y^2}{x + y} \right)$ show that $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = \tan u$.

ii) If $y = ae^x + be^{-x}$ find $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$.

3 a) i) Evaluate $\int \frac{3x+7}{3x^2+14x-5} dx$.

ii) Evaluate $\int \frac{dx}{4+5 \sin x}$.

OR

b) i) Evaluate $\int \frac{(\log x)^4}{x} dx$.

ii) Evaluate $\int \frac{dx}{25 - 16x^2}$.

Code No. 1063

2

4 a) i) Show that $\begin{bmatrix} 1 & a & a^2 \\ 1 & b & b^2 \\ 1 & c & c^2 \end{bmatrix} = (a - b)(b - c)(c - a)$

ii) If $A = \begin{bmatrix} 2 & 0 & 3 \\ 6 & 2 & 1 \\ 3 & 1 & 4 \end{bmatrix}$ find A^{-1} .

OR

b) i) Solve $x + 4y - 2z = 3$, $3x + y + 5z = 7$, $2x + 3y + z = 5$ by auss elimination method.

ii) Find the rank of matrix $A = \begin{bmatrix} 2 & 1 & 3 \\ 3 & 2 & 1 \\ 4 & 5 & 5 \end{bmatrix}$.

5 a) i) Define linear and non linear raphs with an example.

ii) Find the equation of the line passin thrh (1, 1) and perpendicular to $3x - 4y = 6$.

OR

b) i) Find the centre and radius of the circle $x^2 + y^2 + 4x + 6y + 4 = 0$.

ii) Show that the followin points lie on a line and find its equation (5,5), (5, 1) and (10, 7).
