Code No. . 2654

FACULTY OF PHARMACY
B. Pharmacy 1 Year (Suppi.) Examination, Oct./Nov. 2012
MATHEMATICS

Time: 3 Hours] [Max. Marks: 70

Note : Answer all questions.
All questions carry equal marks.

1. a) i) If $\frac{\log x}{b-c} = \frac{\log y}{c-a} = \frac{\log z}{a-b}$ then show that $x^a y^b z^c = 1$

ii) Prove that $\sin^{e}\left(\frac{27c}{3}\right) + \log^{e}_{6} 5 \cdot \tan^{g}\left(\frac{31^\circ}{4}\right) = \frac{1}{2}$

OR

b) If $\frac{\log a}{1} = \frac{\log b}{2} = \frac{\log c}{5}$ then find the value of $\frac{a^4 b^3}{c^7}$?

ii) If $\tan 0 = \frac{a}{b}$, find $\frac{a \sin 0 + b \cos 0}{a \sin e - b \cos 0}$

2. a) i) Find the derivative of the function $\sin$

ii) If $f(x) = x^2 \sin(1/x)$ when $x \neq 0$ and $f(0) = 0$, show that f is derivable for every value of x but the derivative b not continuous for x = 0.

OR

b) i) Find the extreme values of $f(x) = 5x^6 + 18x^5 + 15x^4 - 10$.

ii) If $u = ax + 6y + 8z^2$ and $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} + \frac{\partial u}{\partial z} = 0$, find the value of a.

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3. a) i) Evaluate $\int_a^g \quad ^2 dx$

ii) **Evaluate** $\int_x^{1+x} \frac{\log x}{x} e^x dx.$

OR

b) **Evaluate** $\int \frac{\sin(\log x)}{x} dx$

ii) **Evaluate** $\frac{x^2+2x+5}{(x+2)(x-1)(3x-1)} dx$

4. a) i) Define rank of the matrix. Find the rank of the matrix $A = \begin{vmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{vmatrix}$

iii) **It** $A = \begin{vmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 3 \end{vmatrix}$ **find** A^{-1}.

OR

b) i) Solve, with the help of matrices, the simultaneousequations x y + z = 3; x + 2y + 3z = 4; x + 4y + 9z = 6.

ii) By using the Gauss elimination method, solve the system of equations 2x + y + 4z = z; x + 3y - 2z = 7; 5x + 3y - 5z = -8.

5. a) ') Find the equation of the straight line passing through the point (-2, 1) and parallel to 4x - 7y + 3 = 0.

) Derive the equations of straight line and explain the equation y = mx + c. How do you determine m. Whatis the important of m and c in biological data interpretation.

OR

b) i) Explain about various linear and non-linear graphs and their importance in representing biological data and their comparison.

ii) Find the equation of the circle passing through the point (3, -4) and concentric with $x^2 + y^2 + 4x - 2y + 1 = 0$.