

Code No. 7204 / M

FACULTY OF PHARMACY
B. Pharmacy I - Year (Main) Examination, June 2014
Subject : Mathematics
Time : 3 hours
Max. Marks : 70
Note : Answer all questions. All questions carry equal marks.

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

ii) If $(3.4)^x = (0.034)^y = 10000$ find the value of $\frac{1}{x} - \frac{1}{y}$. 7

OR

b) i) If $\tan A = \frac{1}{2}$ and $\tan B = \frac{1}{3}$ what is the value of $A + B$? 7

ii) If $\frac{\log 2^a}{4} = \frac{\log 2^b}{6} = \frac{\log 2^c}{3P}$ and $a^3 b^2 c = 1$ find the value of P . 7

2 a) i) Find the derivative of $\sec x$ using first principle. 7

ii) Find the derivative of $e^{\sqrt{ax+b}}$. 7

OR

b) i) If $y = ae^x + be^{-x}$ find $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$. 7

ii) Find the derivative of $\sin^{-1} \sqrt{x}$. 7

3 a) i) Evaluate $\int \frac{(1 + \log x)^3}{x} dx$ 7

ii) $\int \frac{1}{(2x+3)\sqrt{x+2}}$ 7

OR

b) i) Evaluate $\int \frac{1}{5+4\cos x} dx$ 7

ii) Evaluate $\int \frac{2x+1}{x^2+x+1} dx$ 7

4 a) i) $A = \begin{bmatrix} 2 & 0 \\ 3 & -5 \end{bmatrix}$ show that $A^2 + 3A - 10I = 0$ 7

ii) Show that $\begin{vmatrix} 1 & a & a^2 \\ 1 & b & b^2 \\ 1 & c & c^2 \end{vmatrix} = (a-b)(b-c)(c-a)$ 7

OR

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- b) i) Solve using Gauss-Jordan method $x + y + z = 9$, $2x + 5y + 7z = 52$ and $2x + y - z = 0$. 7

- ii) Find the rank of the matrix $\begin{bmatrix} 1 & 0 & -4 \\ 2 & -1 & 3 \end{bmatrix}$. 7

- 5 a) i) Find the equation of the circle which passes through (6, 5), (4, 1) and whose centre lies on the line $4x + 3y - 24 = 0$. 7

- ii) Find the equation of the line passing through (1, -6) and having intercepts whose product is 1. 7

OR

- b) i) Show that the following points lie on a line and find its equation (5, 5), (-5, 1), (10, 7). 7

- ii) Find the circle which passes through (1, 2), (3, -4) and (5, -6). 7

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