Code No. 13030/Non CBCS

FACULTY

B. Pharmacy I Year (Non CBCS)(Backlo) Examination, December 2018

Subject : Mathematics

Time : 3 Hrs **Max. Marks: 70**

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

1 (a) (i) Show that $\sin(45^\circ + A)\sin(45^\circ - A) = \frac{1}{2}\cos 2A$.

(ii) If A + B | C = 180° prove that $\sin\frac{A}{2} + \cos\left(\frac{B \square C}{2}\right) = 2\cos\frac{B}{2}\cos\frac{C}{2}$.

OR

(b) (i) If $\log_a abc = x+1$, $\log_b abc = y+1$ and $\log_c abc = z+1$ show that xyz = x + y + z.

(ii) Prove that $\tan 9^\circ - \tan 27^\circ - \tan 63^\circ + \tan 81^\circ = 4$.

2 (a) (i) Find the derivative of $f(x, y) = x^2 + y^2 + x$, usin first principal.

(ii) Discuss the continuity of the function

$$f(x) = \begin{cases} \frac{x^2+y^2}{xy}, & (x,y) \neq (0,0) \\ 0, & (x,y) = (0,0) \end{cases}$$ at (0, 0)

OR

(b) (i) Find the maximum and minimum values of the function $f(x, y) = 4x^2 + 9y^2 - 8x - 12y + 4$.

(ii) If $u = \sin^{\square 1}\left(\frac{x^2+y^2}{x+y}\right)$ prove that $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} = Tan\, u$.

3 (a) (i) Evaluate $\int x\sqrt{x}\, dx$.

(ii) Evaluate $\int \frac{x^8}{x^6+1} dx$

OR

(b) (i) Evaluate $\int \frac{3x+4}{x^2+2x+3} dx$

(ii) Evaluate $\int \frac{1}{2+3\sin x} dx$

4 (a) (i) If $A = \begin{bmatrix} 3 & \square 5 \\ \square 4 & 2 \end{bmatrix}$ prove that $A^2 - 5A = 14\, I$, where I is the unit matrix of second order.

(ii) Solve the equation x + 3y + 6z = 2, 3x – y + 4z = 9, x – 4y + 2z = 7 by matrix Inversion method.

OR

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(b) (i) Find the rank of the matrix $A = \begin{bmatrix} 3 & -1 & 2 \\ -6 & 2 & 4 \\ -3 & 1 & 2 \end{bmatrix}$

(ii) If $A = \begin{bmatrix} 1 & 2 \\ -2 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 1 \\ 2 & 3 \end{bmatrix}$ and $C = \begin{bmatrix} -3 & 1 \\ 2 & 0 \end{bmatrix}$ verify that

A (B+C) = AB + AC.

5 (a) (i) Explain Linear and non Linear raphs with examples.
(ii) Find the equation of the circle passin thrh the points (1, 0), (2, 1) (5, 3).

OR

(b) (i) What are the basic mathematical principles are used in bioloical Testin.
(ii) Find the equation of the Line passin thrh (3, 2) with slope 2/3.

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