Code No. 13279

FACULTY

Pharm. D. (6 YDC) I-Year (Main & Backlog) Examination, July 2019

Subject: Remedial Mathematics

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

Note: Answer all questions from Part A, Answer any Five questions from Part B.

PART-A (10x2 = 20 Marks)

1. If A = $\begin{bmatrix} 1 \\ 3 \end{bmatrix}$ and B = $\begin{bmatrix} 1 & 6 & 7 \end{bmatrix}$ find AS

2. Find the value of $\begin{vmatrix} Tanx & Secx \\ Secx & Tanx \end{vmatrix}$

3. Find the value of 'a' if the distance between the points $(a, 2)$ and $(3, 4)$ is $\sqrt{8}$ units.

4. Find the centre and the radius of the circle $2x^2 + 2y^2 - 8x - 12y - 3 = 0$

5. Evaluate $\int Secx\, dx$

6. Find the order and degree of the differential equation $1 + \left(\dfrac{dy}{dx}\right)^2 = 7\left(\dfrac{d^2y}{dx^2}\right)^3$

7. Find $\lim\limits_{x \to 2}\left(3x^3 + 2x^2 + x\right)$

8. Solve $\dfrac{dy}{dx} = (x + y)^2$

9. Find the Laplace transform of $\left\{e^{at}\right\}$

10. If $z = 2xy + y^3 - 3$, find $\dfrac{\partial z}{\partial x}$ and $\dfrac{\partial z}{\partial y}$

PART-B (5x10=50)

11. (a) If A = $\begin{bmatrix} 3 & -5 \\ -4 & 2 \end{bmatrix}$ show that $A^2 - 5A = 14I$

    (b) Show that $\begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ a^2 & b^2 & c^2 \end{vmatrix} = (a-b)(b-c)(c-a)$ 10M

12. (a) $Sin_n = 3/5$ and $_n$ is acute, find the value of value of
       $2Tan_n + 3Sec_n + 4Sec_n.Co\sec_n$

    (b) Eliminate $_n$ from $x = a\cos_n$, $y = a\sin_n$ show that $x^2 + y^2 = a^2$ 10M

13. (a) Find the equation of the circle passing through the points (1,1) (-2,2) (-6,0)

    (b) Find the equation of the parabola whose Focus is (-1,1) and directix is
       $x + y + 1 = 0$ 10M

14. (a) If $u = \dfrac{x^3 + y^3}{x - y}$ then $x\dfrac{\partial u}{\partial x} + y\dfrac{\partial u}{\partial y} = Sin2u$

    (b) Find $\dfrac{dy}{dx}$ if $y = \dfrac{x^2 - 3x + 5}{x^2 + 3x + 5}$ 10M

15. (a) Evaluate $\displaystyle\int \dfrac{1}{1 + \cot x}dx$

    (b) Evaluate $\displaystyle\int x^3 e^{2x} dx$ 10M

16. (a) Solve $(x + 1)\dfrac{dy}{dx} + 1 = 2\,e^{-y}$

    (b) $x^2\dfrac{dy}{dx} = x^2 + xy + y^2$ 10M

17. (a) Find the Laplace transforms of $e^{-3t}\left(2\cos 5t - 3\sin 5t\right)$

    (b) Find the Laplace transforms of $e^{-4t} + 3e^{-2t}$ 10M

18. (a) Find the equation of the circle whose centre is (-3, 1) and passing through the

    centre of the circle $x^2 + y^2 + 2x - 4y + 4 = 0$

    (b) Show that $\displaystyle\lim_{x \to 2} \dfrac{Tan\left(x - 2\right)}{x^2 - 4} = \dfrac{1}{4}$ 10M

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