

PARUL UNIVERSITY
FACULTY OF PHARMACY

Pharm.D Supplementary Examination November - 2017

Year: 1

Date: 17/11/2017

Subject Code: 08207131

Time: 10.00am to 01.00 pm

Subject Name: Remedial Mathematics

Total Marks: 70

Instructions

1. Figures to the right indicate maximum marks.
2. Make suitable assumptions wherever necessary.

Q.1 Essay Type Questions. (any 2 out of 3) (15 Mark Each) (30)

1. For what matrix A, A^2 can be computed? If $A = \begin{bmatrix} -2 & 3 & 1 \\ 1 & 2 & 3 \\ -1 & -1 & 2 \end{bmatrix}$ find $A^2 - 3I$.
2. Find the equation of the circle having centre (2, 3) and passing through the point of intersection of the lines $3x - 2y - 1 = 0$ and $4x + y - 27 = 0$.
3. Solve the equation : (i) $ydx + xdy = 0$, (ii) $y'' + 5y' + 6y = 0$

Q.2 Short Essay Type Questions. (any 4 out of 5) (5 Mark Each) (20)

1. Define one-to-one and onto function. Which of the functions, (i) $f(x) = x$, (ii) $f(x) = 1, f(x) = x^2$ are one-to-one and onto functions.
2. When the product of the two matrices, A and B is possible? If $A = \begin{bmatrix} 1 & -2 & 3 \\ 4 & 1 & 0 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 1 \\ 2 & 1 \\ 3 & 0 \end{bmatrix}$ which of AB, BA is possible and why? Compute the possible products.
3. Compute $\int \tan x dx$ by the method of substitution.
4. If $f(x, y) = ax^2 + 2hxy + by^2$, compute $\frac{\partial f}{\partial x}, \frac{\partial f}{\partial y}, \frac{\partial^2 f}{\partial x^2}, \frac{\partial^2 f}{\partial y^2}, \frac{\partial^2 f}{\partial x \partial y}$
5. If $f(x) = \frac{3x+2}{5x-2}$, compute $f'(x)$.

Q.3 Short Answers. (2 Mark Each) (20)

1. If the distance between (a, 2) and (3, 4) is $2\sqrt{2}$, then find the value of 'a'.
2. Find the equation of the line inclined at 135° with the positive x-axis and having y-intercept 6.
3. Find the equation of the circle having centre $(a \cos \alpha, a \sin \alpha)$, and radius a .
4. Compute the derivative of the function $f(x) = x \log x$.
5. Compute the integral, $\int_{-1}^1 (2x + 3) dx$.
6. $f(x) = 2x^2 + 5x + 3$, and $g(x) = 2x + 5$. Find $f(g(2))$.
7. If $A = \begin{bmatrix} 1 & -1 & 0 \\ 2 & -2 & 0 \\ 1 & 1 & 1 \end{bmatrix}$, is it possible to find A^{-1} ? Why?
8. For ΔABC , $\angle A = 30^\circ$, $b = \sqrt{3}$, $c = 2$, find a , and, also solve the triangle
9. Find the equation of the line passing through the points (2, -3) and (5, 6).
10. Find the centroid of the triangle with the vertices (2, 1), (5, 2) and (-1, 3).