



The Rawalpindi Women University

Department of Mathematics

M.Phil (MATHEMATICS) SAMPLE ADMISSION TEST

- **The M.Phil Mathematics test will be subject based (Mathematics) and will contain 75 MCOs.**
- **The total duration of test is 2 hrs.**
- **This is only a sample test pattern.**

Directions: Carefully understand each question and select the best answer from the given choices and then encircle the correct option.

1. The range of function $\tan x$ is _____.
 - a) $-1 \leq y \leq 1$
 - b) $0 \leq y \leq 1$
 - c) $-1 \leq y \leq 0$
 - d) $-\infty < y < \infty$.
2. If $\sin x = y, 0 < x < \pi$, then $\frac{dy}{dx}$ in terms of x is _____.
 - a) $-\tan x$
 - b) $\cos x$
 - c) $\tan x$
 - d) $\operatorname{cosec} x$.
3. If $f(x, y) = 3x^2 + 2xy + 2y^2 - 1$, then the value of $\partial f / \partial x$ is _____.
 - a) $6x+2y$
 - b) $6x-2y$
 - c) $x+y$
 - d) xy
4. Derivative of a constant function is _____.
 - a) 1
 - b) Does not exist
 - c) 0
 - d) None of these
5. Magnitude of complex number $z = 4 + 3i$ is _____.
 - a) 5
 - b) $\sqrt{26}$
 - c) $\sqrt{4 - 3i}$
 - d) 1

6. $\lim_{x \rightarrow 1} (x^7 - 2x^5 + 1)^{35}$ is _____.
- a) 0
 - b) 1
 - c) ∞
 - d) None of these
7. Which one represents the triangular inequality?
- a) $d(x, y) + d(y, z) \leq d(x, z)$
 - b) $d(x, y) + d(y, z) \geq d(x, z)$
 - c) $d(x, y) + d(y, z) > d(x, z)$
 - d) $d(x, y) + d(y, z) = d(x, z)$
8. Any graph will represent a function if _____ line $x = c$ in its domain intersects the curve in one point only
- a) vertical
 - b) horizontal
 - c) both (a) and (b)
 - d) none of these.
9. If M is a square matrix in which two rows are equal then _____
- a) $\det(M) = 0$
 - b) $\det(M) \neq 0$
 - c) $\det(M)$ is complex
 - d) None of these.
10. If $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$ then its determinant is _____.
- a) $ad - cb$
 - b) $ad + cb$
 - c) 0
 - d) None of these