

GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY UNIVERSITY, ODISHA, GUNUPUR
SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF THE BASIC SCIENCE AND HUMANITIES
ASSIGNMENT-01

Name of the Student : _____

Subject Name : Engineering Mathematics-II

Subject Code : 23BBSBS12001

Section : G, K, M

Semester : 2nd Semester

Assignment Date : 05-02-2025

Submission Date : 08-02-2025

01. Form a partial differential equation by eliminating a, b, c from $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$
02. Form a partial differential equation by eliminating the arbitrary functions f and g from $z = y \cdot f(x) + x \cdot g(y)$
03. If $z = f(x + ay) + \phi(x - ay)$, prove that $\frac{\partial^2 z}{\partial y^2} = a^2 \left(\frac{\partial^2 z}{\partial x^2} \right)$
04. Form a partial differential equation by eliminating the arbitrary functions from $f\left(\frac{x-a}{z-c}, \frac{y-b}{z-c}\right) = 0$
05. Solve the partial differential equation $y^2 p - xyq = x(z - 2y)$
06. Solve the partial differential equation $py + qx = xyz^2(x^2 - y^2)$
07. Solve the partial differential equation $(y - z)p + (z - x)q = (x - y)$
08. Solve the partial differential equation $(y + z)p + (z + x)q = (x + y)$
09. Solve the partial differential equation $px(x + y) - qy(x + y)q + (x - y)(2x + 2y + z) = 0$
10. Find the complete intergral of $16p^2z^2 + 9q^2z^2 + 4z^2 - 4 = 0$
11. Find the complete intergral of $p^2 + q^2 - 2px - 2qy + 2xy = 0$
12. Solve the partial differential equation $p^2q^2 + x^2y^2 = x^2q^2(x^2 + y^2)$
13. Find the complementary function of $(D_x + 2D_y - 3)(D_x + D_y - 1)z = 0$
14. Find the complementary function of $(D_x^3 - D_x^2D_y - 8D_xD_y^2 + 12D_y^3)z = 0$
15. Find the complementary function of $(D_x^4 - D_y^4)z = 0$