ASSIGNMENT 2

.

Subject Code : **MC-406**   Course Title : **Partial Differential Equations**

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Syllabus

Unit -2 Second order PDEs: Classifcation of second order PDEs, reduction to canonical or normal forms and characteristics equation, Monge's method, method of separation of variables, Initial and boundary value problems.

Instructions

Write your name and roll number on the first page of your assignment. The assignment should be legibly handwritten and on both sides of the paper. I will follow a zero toleration policy towards copying in any form. The assignment must be submitted as a single pdf file before the due date without fail. For any further query feel free to contact me. Timely submission of the assignment will be appreciated. There will be no credit for late submissions.

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1. Find the characteristics of the following

   (a) $y^2 r - x^2 t = 0$ and

   (b) $x^2 r + 2xys + y^2 t = 0$.

2. Reduce the following partial differential equations to canonical form:

   (a) $\partial^2 z/\partial x^2 - \partial^2 z/\partial y^2 = 0$ and

   (b) $y^2(\partial^2 z/\partial x^2) + x^2(\partial^2 z/\partial y^2) = 0$.

3. Solve the following partial differential equations

   (a) $y(x + y)(r - s) - xp - yq - z = 0$,

   (b) $x^2 r - y^2 t + px - qy = x^2$ and

   (c) $r - 4s + 4t$.

4. Solve $q(yq + z)r - p(2yq + z)s + yp^2 t + p^2 q = 0$ using the Monge's method.

5. Solve $(q + 1)s = (p + 1)t$.

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