CC 11 (Partial Differential Equations & Applications)

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Untitled Section

1. The partial differential equation $\frac{\partial^2 u}{\partial t^2} = 9\frac{\partial^2 u}{\partial x^2}$ is

(a) Parabolic (b) Hyperbolic (c) Ellipse (d) none of these

- a
- b
- c
- d

2. The order of the partial differential equation $\frac{\partial^2 z}{\partial x^2} - 2\frac{\partial^2 z}{\partial x \partial y} + \left(\frac{\partial z}{\partial y}\right)^2 = 0$

(a) 1 (b) 2 (c) 3 (d) none of these

- a
- b
- c

- d

3. The partial differential equation

$(x+y-z)\frac{\partial z}{\partial x}+(3x+2y)\frac{\partial z}{\partial y}+2z-x-y=0$ is

(a) Linear (b) Non-linear (c) Semi linear (d) Quasi-linear

- a
- b
- c
- d

4. The Lagrange's auxiliary equation for the differential equation Pp+Qq=R are

(a) $\frac{dx}{P}=\frac{dz}{R}$ (b) $\frac{dx}{P}=\frac{dz}{R}=\frac{dy}{Q}$ (c) $\frac{dx}{P}=\frac{dy}{Q}$ (d) none of these

- a
- b
- c
- d

5. Subsidary equation for the equation $\frac{y^2z}{x}+zxy=y^2$ *are*

(a) $\frac{dx}{\frac{1}{x^2}}=\frac{dy}{\frac{1}{y^2}}=\frac{dz}{\frac{1}{zx}}$ (b) $\frac{dx}{y^2z}=\frac{dy}{zx}=\frac{dz}{y^2}$ (c) $\frac{dx}{x^2}=\frac{dy}{y^2}=\frac{dz}{zx}$ (d) None of these.

- a

- b
- c
- d

6. The general solution of the partial differential equation (y-z)p+(z-x)q=x-y is

(a) $\varphi(xyz, x^2+y^2+z^2)=0$ (b) $\varphi(x^2-y^2-z^2, x-y-z)=0$

(c) $\varphi(xyz, x+y+z)=0$ (d) $\varphi(x+y+z, x^2+y^2+z^2)=0$

- a
- b
- c
- d

7. The partial differential equation that can be from z = ax + by + cz has the form

(a) z = px + qy (b) z = px + q (c) z = px +qy + pq (d) z = qy + pq

- a
- b
- c
- d

8. Which of the flow does the Laplace's equation $\frac{\partial^2 u}{\partial x^2}+\frac{\partial^2 u}{\partial y^2}=0$ belongs to

(a) Elliptic (b) Hyperbolic (c) Parabolic (d) None of these

- a

- ○ b
- ○ c
- ○ d

9. The equation $\frac{\partial^2 u}{\partial t^2} = c^2 \frac{\partial^2 u}{\partial x^2}$ is known as

(a) One dimensional heat equation (b)Two dimensional heat equation

(c) One dimensional wave equation (d) Laplace equation

- ○ a
- ○ b
- ○ c
- ○ d

10. What is another name for heat equation

(a) Induction equation (b) Condense equation

(c) Diffusion equation (d) Solar equation

- ○ a
- ○ b
- ○ c
- ○ d

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