



A CharutarVidyaMandal's Institution
V.P. & R.P.T.P. SCIENCE
COLLEGE(AUTONOMOUS) (Grant-in-Aid)
Affiliated to Sardar Patel University
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Bachelor of Science (Semester -III) External Examination - 2025
US03IDMTH03: Ordinary Differential Equations

Date: 08-10-2025, (Wednesday)

Time: 02:00 PM to 03:30PM(1.5 HRS.) **Total marks: 25**

Q-1 Answer the following by selecting correct choice from the options. [05]

- Which of the following differential equation is not an exact?
(a) $x^2dx + e^ydy = 0$ (b) $(\frac{dy}{dx})^2 = y$ (c) $xdx + ydy = 0$ (d) none of these
- The solution of $\frac{dy}{dx} + x = 0$ is $y = \dots$
(a) $\frac{2c-x^2}{2}$ (b) $\frac{c-2x^2}{2}$ (c) $c + x^2/2$ (d) $\frac{x^2-c}{2}$
- Integrating factor of $\frac{dy}{dx} - 3y = \sin x$ is.....
(a) e^{3y} (b) e^{-3y} (c) e^{3x} (d) e^{-3x}
- The Differential equation of $A \sin x + B \cos x = y$ is.....
(a) $y'' + y = 0$ (b) $y'' - y = 0$ (c) $y'' + 2y = 0$ (d) none of these
- The P.I. of $(D^2 + 4D + 4)y = 1$ is....
(a) $\frac{x}{4}$ (b) $\frac{1}{4}$ (c) $-\frac{1}{4}$ (d) none of these



Q-2 Solve 1. $x^2ydx - (x^3 + y^3)dy = 0$. 2. $\frac{dy}{dx} + y = x$ [10]

OR

Q-2 Solve 1. $(x^2 + y^2 + 3)dx - 2xydy = 0$. 2. $\frac{dy}{dx} + x + y = 0$. [10]

Q-3 Solve 1. $(D^2 + 5D - 6)y = 0$, 2. $(D^2 + 3D + 2)y = \cos 3x$. [10]

OR

Q-3 1. Solve $(D^2 - 4)y = e^{2x}$. [06]

2. Find the derivative family of $\sin 2x$. [04]