



A Charutar Vidya Mandal's Institution
V.P. & R.P.T.P. SCIENCE COLLEGE
(AUTONOMOUS) (Grant-in-Aid)
Affiliated to Sardar Patel University
VALLABH VIDYANAGAR-388120



Bachelor of Science (Semester -4) External Examination - 2026
Subject Code:US04MIMTH01 Subject Name: Ordinary Differential Equations

Date: 27-03-2026, (Friday)

Time: 01:45 PM to 03:15 PM (1.5 HRS.)

Total marks: 25

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

5]

1. Order and Degree of $[1 + (\frac{dy}{dx})^2]^3 = c^2(\frac{d^2y}{dx^2})^2$ is
(a) (2,3) (b) (2,2) (c) (1,6) (d) none of these
2. The solution of $(y+1)dx + xdy = 0$ is
(a) $xy + x = c$ (b) $(y+1) = c$ (c) $\frac{x}{y+1} = c$ (d) none of these
3. Differential equation of $y = Ae^x + Be^{-x}$ is.....
(a) $y'' + y = 0$ (b) $y'' - y = 0$ (c) $y'' - y' = 0$ (d) $y'' + y' = 0$
4. The P.I of $\frac{1}{D^2+2} \sin 2x$ is
(a) $-\frac{\sin 2x}{2}$ (b) $\frac{\sin 2x}{2}$ (c) $\frac{\sin 2x}{6}$ (d) none of these
5. The wronskian of $y_1 = e^x$ and $y_2 = e^{2x}$ is....
(a) e^{3x} (b) e^{2x} (c) e^x (d) 1



Q-2 (a) P.T. the necessary and sufficient condition for the differential equation

$Mdx + Ndy = 0$ to be an exact is that $\frac{\partial M}{\partial y} = \frac{\partial N}{\partial x}$. [08]

(b) Solve $e^{2x}dx + 2ydy = 0$. [02]

OR

Q-2 (a) Find the Complete integral of $(x^2y - 2xy^2)dx - (x^3 - 3x^2y)dy = 0$. [05]

(b) Solve $\frac{dy}{dx} - y = e^{2x}$. [05]

Q-3 Find the general solution of 1. $\frac{d^2y}{dx^2} - 4\frac{dy}{dx} + 4y = e^x$. [05]

2. $(D^2 + 9)y = x \sin x$. [05]

OR

Q-3 (a) Solve $(x^2D^2 + xD - 4)y = x^2$ [05]

(b) Find the G.S. of $\frac{d^2y}{dx^2} + y = \sec x$ by the method of variation of parameters. [05]

*****All The Best*****