



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



B.Sc (Semester 4) Internal Examination - 2026
US04MIMTH01 : Ordinary Differential Equations

Date: 10/03/2026

Day: Tuesday

Time: 02:45pm TO 03:45pm

Total marks : 20

Q-1 Answer the following by selecting correct choice from the options. [6]

- The differential equation is an exact if.....
 (a) $\frac{\partial M}{\partial x} = \frac{\partial N}{\partial y}$ (b) $\frac{\partial M}{\partial y} = \frac{\partial N}{\partial x}$ (c) $\frac{\partial M}{\partial x} = -\frac{\partial N}{\partial y}$ (d) $\frac{\partial M}{\partial y} = -\frac{\partial N}{\partial x}$
- The solution of $y'' - 4y' = 0$ is $y = \dots$
 (a) $A + Be^{-4x}$ (b) $A + Be^{4x}$ (c) $Ae^{-2x} + Be^{2x}$ (d) none of these
- Integrating factor of $\frac{dy}{dx} + Py = Q$ is.....
 (a) $e^{\int p dx}$ (b) $e^{\int p dy}$ (c) $e^{-\int p dy}$ (d) none of these
- The P.I of $y'' + 4y = 77$ is
 (a) $77/4$ (b) $4/77$ (c) $77/3$ (d) $1/77$
- To find solution of $y'' - y = \tan x$ the best method is
 (a) Undetermined co-efficient (b) variation of parameter (c) power series (d) separation of variables
- The P.I. of $(D^2 - 9)y = \sin x$ is....
 (a) $-\frac{1}{8}\sin x$ (b) $-\frac{1}{10}\sin x$ (c) $\frac{1}{8}\sin x$ (d) $-\frac{1}{10}\cos x$



Q-2 Solve 1. $\frac{dy}{dx} + y = x$, 2. $ye^x dx + (2y + e^x)dy = 0$. [7]

OR

Q-2 Prove that $\frac{1}{f(D)}e^{mx} = \frac{1}{f(m)}e^{mx}$, for $f(m) \neq 0$. [7]

Q-3 Find the general solution of 1. $\frac{d^2y}{dx^2} - 4y = \cos 2x$. 2. $(D^3 - 1)y = 0$ [7]

OR

Q-3 Solve $(x^2 D^2 + xD - 4)y = x^2$ [7]

No of printed pages: 01

Supervisor's sign

Seat No.:



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B.Sc (Semester 4) Quiz - 2025

US04MIMTH01 : Ordinary Differential Equations

Date: 10/03/2026

Day: Tuesday

Total marks : 05

Time: 02:45pm to 03:45pm

Obtained Marks:.....

Q-1 Fill in the blanks with appropriate answer given in the bracket. OR Answer with either true or false.

- (i) Order & Degree of D.E $\left[\frac{dy}{dx}\right]^3 + \frac{d^2y}{dx^2} = 5$ is.... $\{(1,3), (2,1), (1,2)\}$
- (ii) Solution of $dx/x + dy/y = 0$ is $\{x + y = c, x - y = c, xy = c\}$
- (iii) C.F of $y'' - 6y + 9 = 0$ is $\{C_1e^{3x} + C_2xe^{3x}, C_1e^{3x} + C_2xe^{-3x}, C_1\cos 3x + C_2\sin 3x\}$
- (iv) P.I of $y'' - y = e^x$ is xe^x . True..... False.....
- (v) The Wronskian of $y_1 = \sin x$ and $y_2 = \cos x$ is -1. True..... False.....



Signature of Examiner :