



DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B.TECH SEMESTER-II [CE/IT/EC]
SUBJECT: MATHEMATICS-II (BS-201)

Examination : First Sessional

Date : 20/03/2023

Time : 1 hr 15 min

Seat No. :

CE031

Day :

Monday

Max. Marks :

36

INSTRUCTIONS:

1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1 Do as directed.

- CO1 A** (a) Mention the order and degree of the following differential equation: [2]
$$\sqrt{1 + \frac{dy}{dx}} = y + \left(\frac{dy}{dx}\right)^2.$$
- CO1 A** (b) Solve : $(2x + 3y + 20)dx + (3x + 10y + 2023)dy = 0.$ [2]
- CO1 A** (c) Solve : $xp^2 - py + 59 = 0.$ [2]
- CO1 A** (d) Solve : $\frac{dy}{dx} - 5y = e^{2x}.$ [2]
- CO2 A** (e) Evaluate : $\int_0^2 \int_{-1}^1 (x - 2y)dydx.$ [2]
- CO2 A** (f) Change the order of integration *only* $\int_0^a \int_0^y f(x, y)dx dy.$ [2]

Q.2 Attempt Any Two from the following questions.

- CO1 A** (a) Solve the following equation: $y + x\left(\frac{dy}{dx}\right) = x^4\left(\frac{dy}{dx}\right)^2$; solvable for $y.$ [6]
- CO1 A** (b) Solve the following equation: $p^2 + 2py \cot x = y^2$; solvable for $p.$ [6]
- CO1 A** (c) Solve : $\frac{dy}{dx} = 2y \tan x + y^2 \tan^2 x.$

- Q.3 CO1 A** (a) Solve : $(1 + y^2)dx = (e^{-\tan^{-1} y} - x)dy.$ [6]
- CO2 A** (b) Change the order of integration $\int_0^a \int_{\frac{x^2}{a}}^{2a-x} xydydx$ and hence evaluate it. [6]

OR

- Q.3 CO1 A** (a) Solve the following equation: $x = y + 2020 \log\left(\frac{dy}{dx}\right)$; solvable for $x.$ [6]
- CO2 A** (b) Change the order of integration $\int_0^\infty \int_0^y x e^{\frac{-x^2}{y}} dydx$ and hence evaluate it. [6]