

Topic : Definite Integration

Type of Questions

M.M., Min.

Single choice Objective ('-1' negative marking) Q.1,2,3,4,5,6,7,8 (3 marks, 3 min.) [24, 24]
Multiple choice objective ('-1' negative marking) Q.9 (5 marks, 4 min.) [5, 4]

- A particular solution of $\frac{dy}{dx} = \frac{x(2\log x + 1)}{\sin y + y \cos y}$ is -
 (A) $y \sin y = x \log x$ (B) $y^2 \sin y = x \log x$ (C) $y \sin y = x^2 \log x$ (D) none of these
- The solution of differential equation $(1 + y^2) + \left(x - 2e^{\tan^{-1} y}\right) \frac{dy}{dx} = 0$ is
 (A) $(x - 2) = k e^{2 \tan^{-1} y}$ (B) $x e^{\tan^{-1} y} = e^{2 \tan^{-1} y} + k$
 (C) $x e^{\tan^{-1} y} = \tan^{-1} y + k$ (D) $x e^{2 \tan^{-1} y} = e^{2 \tan^{-1} y} + k$
- The solution of the differential equation $x^2 \frac{dy}{dx} \cdot \cos\left(\frac{1}{x}\right) - y \sin\left(\frac{1}{x}\right) = -1$, where $y \rightarrow -1$ as $x \rightarrow \infty$ is.
 (A) $y = \sin \frac{1}{x} + \cos \frac{1}{x}$ (B) $y = \frac{x+1}{x \sin(1/x)}$
 (C) $y = \sin \frac{1}{x} - \cos \frac{1}{x}$ (D) $y = \frac{x+1}{x \cos(1/x)}$
- Solution of the differential equation $(x^2 + y^3)(2x^2 dx + 3y dy) = 12x dx + 18y^2 dy$ is
 (A) $\frac{2}{3}x^3 + \frac{3}{2}y^2 = 6 \ln(x^2 + y^3) + c$ (B) $x^2 + y^3 = 9 \ln(x^2 + y^3) + c$
 (C) $\frac{2}{3}x^3 + \frac{3}{2}y^2 = 6 \ln(x^3 + y^2) + c$ (D) $x^3 + y^2 = 6 \ln(x^2 + y^3) + c$
- Solution of differential equation $(2x \ln y) dx + \left(\frac{x^2}{y} + 3y^2\right) dy = 0$ is
 (A) $x^2 \ln y + y^3 = c$ (B) $x \ln y + y^2 = c$ (C) $x^2 \ln y + y^2 = c$ (D) none of these
- If solution of the differential equation $\frac{dy}{dx} = \frac{1}{x \cos y + \sin 2y}$ is $x = ce^{\sin y} - k(1 + \sin y)$, then $k =$
 (A) 1 (B) 2 (C) 3 (D) 5
- A curve passes through the point $(2a, a)$ and is such that sum of subtangent and abscissa is equal to a . Its equation is
 (A) $(x - a)y^2 = a^3$ (B) $(x - a)^2 y = a^3$ (C) $(x - a)y = a^2$ (D) none of these
- If $[\cdot]$ represents the greatest integer function, then $\int_4^{10} \frac{[x^2]}{[x^2 - 28x + 196] + [x^2]} dx$ is equal to -
 (A) 0 (B) 1 (C) 3 (D) None of these
- Which of the following equation(s) is/are linear differential equation.
 (A) $\frac{dy}{dx} + \frac{y}{x} = \ln x$ (B) $y \left(\frac{dy}{dx}\right) + 4x = 0$ (C) $dx + dy = 0$ (D) $\frac{d^2 y}{dx^2} = \cos x$

Answers Key

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|---------------|--------|--------|--------|
| 1. (C) | 2. (B) | 3. (C) | 4. (A) |
| 5. (A) | 6. (B) | 7. (C) | 8. (C) |
| 9. (A)(C) (D) | | | |