

Time: $1\frac{1}{2}$ Hours

Max. Marks: 30

NOTE: This question paper is divided into three sections: Section-A , Section-B & Section C

SECTION - A

Attempt any eight questions

8 X 1 = 8

Q.1 Evaluate $\int e^x[\text{Sin}x + \text{Cos}x]dx$

- (a) $e^x \text{Sin}x + c$
- (b) $e^x \text{Cos}x + c$
- (c) $e^x \text{Tan}x + c$
- (d) $e^x \text{Cot}x + c$

Q.2 Evaluate $\int \frac{1}{x^2+4} dx$

- (a) $\frac{1}{4} \tan^{-1} \frac{x}{4} + c$
- (b) $\frac{1}{2} \tan^{-1} \frac{x}{2} + c$
- (c) $\text{Sin}^{-1} \frac{x}{2} + c$
- (d) $\frac{1}{2} \text{sin}^{-1} \frac{x}{2} + c$

Q.3 Evaluate $\int \frac{1}{2x+5} dx$

- (a) $\frac{2}{2x+5} + c$
- (b) $(2x+5)^2 + c$
- (c) $\frac{1}{2} \log(2x+5) + c$
- (d) $\frac{1}{2x+5} + c$

Q.4 Evaluate $\int \sec^2(7-4x)dx$

- (a) $2\sec(7-4x)+c$
- (b) $-\frac{1}{4} \tan(7-4x) + c$
- (c) $\tan x+c$
- (d) $\sec x+c$

Q.5 Evaluate $\int_0^{\frac{\pi}{4}} \cos x dx$

- (a) $\frac{1}{\sqrt{2}}$
- (b) $\sqrt{2}$
- (c) 2
- (d) $2\sqrt{2}$

Q.6 Find the order of differential equation $\frac{d^2y}{dx^2} - 5\frac{dy}{dx} + 6y = x^2$

(a) 1 (b) 3 (c) 2 (d) 0

Q.7 $\int e^{x-3} dx$

(a) $e^x + c$ (b) $e^{2x} + c$ (c) $e^{3x} + c$ (d) $e^{x-3} + c$

Q.8 Integrate $\int e^x [\sec^2 x + \tan x] dx$

(a) $e^x \tan x + c$ (b) $e^x \sec^2 x + c$ (c) $e^x \sin x + c$ (d) $e^x \cos x + c$

Q.9 $\int_1^2 x^2 dx$

(a) $\frac{5}{3}$ (b) $\frac{8}{3}$ (c) $\frac{7}{3}$ (d) $\frac{1}{3}$

Q.10 Find the degree of Differential equation $(\frac{d^3y}{dx^3})^4 + 3(\frac{dy}{dx})^5 + 4y = x$

(a) 5 (b) 3 (c) 2 (d) 4

SECTION - B

Attempt any 4 (four) Questions

4X3=12

Q.1 $\int \cos 4x \cos 2x dx$

Q.2 $\int \frac{\sec^2 x}{3 + \tan x} dx$

Q.3 $\int \frac{\sin(x-a)}{\sin x} dx$

Q.4 $\int \frac{\sin x}{1 + \cos^2 x} dx$

Q.5 $\int \log x dx$

Q.6 $\int \frac{e^{\tan^{-1} x}}{1+x^2} dx$

SECTION - C

Attempt any 2 (two) Questions

5X2=10

Q.1 $\int_{-1}^1 \frac{1}{x^2 + 2x + 5} dx$

Q.2 $\int_0^{\frac{\pi}{2}} x \cos x dx$

Q.3 $\int \frac{1}{x^2(x+1)} dx$

Q.4 $\int_1^2 \frac{x}{(x+1)(x+2)} dx$