Model Question Paper

Integral Calculus - Part I

12th Standard

Maths

Reg.No. : | | | | | | |

I.Answer all questions.

II.Use blue pen only.

Time : 01:00:00 Hrs

Total Marks : 75

Section-A

3 x 1 = 3

1) The value of $\int_0^{\frac{\pi}{2}} \frac{cos^{5/3}}{cos^{5/3}x+sin^{5/3}x}dx$ is

(a) $\pi/2$ (b) $\pi/4$ (c) 0 (d) π

2) The value of $\int_0^{\frac{\pi}{2}} \frac{sinx-cosx}{1+sinxcosx}dx$ is.

(a) $\pi/2$ (b) 0 (c) $\pi/4$ (d) π

3) The value $\int_0^1 x(1-x)^4 dx$ is.

(a) 1/12 (b) 1/30 (c) 1/24 (d) 1/20

Section-B

3 x 3 = 9

4) Evaluate: $\int_{\frac{-\pi}{4}}^{\frac{\pi}{4}} x^3 sin^2 x dx$

5) Evaluate: $\int_{-1}^{1} \log\left(\frac{3-x}{3+x}\right) dx$

6) Evaluate: $\int_0^{\frac{\pi}{2}} sin^6 x \ dx$

Section-C

5 x 6 = 30

7) Evaluate the following problems using second fundamental theorem $\int_0^1 \sqrt{9-4x^2}dx$

8) Evaluate : $\int_{\frac{-\pi}{2}}^{\frac{\pi}{2}} xsinxdx$

9) Evaluate : $\int_{\frac{-\pi}{2}}^{\frac{\pi}{2}} sin^2 \ x \ dx$

10) Evaluate : $\int_0^{\frac{\pi}{2}} \frac{f(sinx)}{f(sinx)+f(cosx)}dx$

11) Evaluate : $\int_0^1 x(1-x)^n dx$

Section-D

5 x 10 = 50

12) Find the area between the curves $y = x^2 - x - 2$, x-axis and the lines x= -2 and x=4

13) Find the area between the line y=x+1 and the curve $y = x^2 - 1$

14) Find the area bounded by the curve $y = x^3$ and the line y=x

15) a) Find the area of the region enclosed by $y^2 = x$ and y = x - 2

(OR)

b) Find the area of the region common to the circle $x^2 + y^2 = 16$ and the parabola $y^2 = 6x$

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