

**Model Question Paper**  
**Integral Calculus - Part II**  
 12th Standard

**Maths**

Reg.No. : 

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I. Answer all questions.

II. Use blue pen only.

Time : 01:00:00 Hrs

Total Marks : 85

3 x 1 = 3

**Section-A**

- 1) The value of  $\int_{-\pi/2}^{\pi/2} \left( \frac{\sin x}{2+\cos x} \right) dx$  is.  
 (a) 0 (b) 2 (c)  $\log 2$  (d)  $\log 4$
- 2) The value of  $\int_0^{\pi} \sin^4 x dx$  is  
 (a)  $3\pi/16$  (b)  $3/16$  (c) 0 (d)  $3\pi/8$
- 3) The value of  $\int_0^{\pi/4} \cos^3 2x dx$  is  
 (a)  $2/3$  (b)  $1/3$  (c) 0 (d)  $2\pi/3$

**Section-B**

5 x 3 = 15

- 4) Evaluate:  $\int_0^{\pi/2} \sin^7 x dx$
- 5) Evaluate:  $\int_0^{\pi/2} \frac{\sin^x}{1+\cos^2 x} dx$
- 6) Evaluate:  $\int_0^1 x e^x dx$

**Section-C**

4 x 6 = 24

- 7) Evaluate:  $\int_0^{\pi/2} \log(\tan x) dx$
- 8) Evaluate:  $\int_{\pi/6}^{\pi/3} \frac{dx}{1+\sqrt{\cot x}}$
- 9) Evaluate the following Problems using properties of integration  $\int_0^{\pi/2} \sin^3 x \cos x dx$
- 10) Evaluate:  $\int \sin^5 x dx$
- 11) a) Evaluate:  $\int_0^a \sqrt{a^2 - x^2} dx$   
 b) Evaluate:  $\int_0^{\pi/2} e^{2x} \cos x dx$

**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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