



# SHIKSHA CLASSES

Subject : Maths- II

BOARD QUESTION PAPER

Total Marks : 20

Class : XII

Topic: 3. Indefinite Integration

Time : 1 Hr.

## Section A

Q.1 : Choose the correct option :

4

i)  $\int \frac{x^2}{x^2+4} dx =$

a)  $x - 2 \tan^{-1}(x/2) + c$

b)  $x + 2 \tan^{-1}(x/2) + c$

c)  $x - 4 \tan^{-1}(x/2) + c$

d)  $x + 4 \tan^{-1}(x/2) + c$

ii)  $\int \frac{dx}{x^3(1-x)} =$  \_\_\_\_\_

a)  $\log \left| \frac{x}{1-x} \right| - \frac{1}{x} - \frac{1}{2x^2} + c$

b)  $\log \left| \frac{1-x}{x} \right| - \frac{1}{x} - \frac{1}{2x^2} + c$

c)  $\log \left| \frac{x}{x-1} \right| + \frac{1}{x} - \frac{1}{2x^2} + c$

d)  $\log \left| \frac{1-x}{x} \right| + \frac{1}{x} + \frac{1}{2x^2} + c$

Q.2 : Solve the following questions:

2

i) Evaluate the following  $\int (x^3 + 3^x).dx$

ii) Evaluate the following  $\int \cot x.dx$

## Section B

: Solve the following : (ANY2)

4

Q.3 : Evaluate  $\int \frac{1}{9x^2 + 6x + 10} dx$

Q.4 : Evaluate  $\int \frac{1}{\cos \alpha + \cos x} dx$

Q.5 : Evaluate  $\int \frac{\sin(x-a)}{\sin(x+a)} dx$

### Section C

: Answer the following : (ANY 2)

6

Q.6 : Evaluate  $\int x \sec^2 x dx$

Q.7 : Evaluate  $\int \frac{2x^2 - 1}{(x^2 + 4)(x^2 + 5)} dx$

Q.8 : Evaluate  $\int \frac{4 \sin x - 38 \cos x}{5 \sin x - 11 \cos x} dx$

### Section D

: Answer the following : (ANY 1)

4

Q.9 : If u and v are function of x then prove that

$$\int uv dx = u \int v dx - \int \left( \frac{du}{dx} \int v dx \right) dx$$

Q.10: Prove that :

$$\int \sqrt{a^2 - x^2} dx = \frac{x}{2} \sqrt{a^2 - x^2} + \frac{a^2}{2} \sin^{-1} \left( \frac{x}{a} \right) + c$$

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