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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