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Maximum Marks: 45   **Integral Calculus – I**   **Duration: 90 minutes**

Std 12 Business Mathematics and Statistics

Answer the following questions   **5 X 1 = 5**

1. Mention any 2 properties of Definite Integrals
2. $\int dx =$
3. $\int \sqrt{e^x}\, dx =$
4. $\int \cos x\, dx =$
5. The relation between Primitive function and the Derived function.

Answer the following (any 4 out of 6)   **4 x 2 = 8**

6. Evaluate $-\int_{\pi/2}^{\pi/2} \cos x\, dx$,using properties of definite integral
7. Evaluate $\int \left(x + \frac{1}{x}\right)^2 dx$
8. Evaluate $\int x e^x\, dx$
9. $\int 3^{2x+3}\, dx$
10. If f'(x) = $8^3 - 2x$ and f (2) = 8, then find f(x)
11. Integrate with respect to x $\frac{1}{\sin^2 x \cos^2 x}$

Answer the following (any 4 out of 6)   **4 x 3 = 12**

12. $\int \frac{1}{\sqrt{x+1}+\sqrt{x-1}}\, dx$
13. Integrate the following with respect to x. $\frac{1}{x(\log x)^2}$
14. Integrate the following with respect to x. $\frac{x^3}{x+2}$
15. Evaluate $\int \sin^3 x\, dx$
16. Integrate $x^3 e^{3x}$ with respect to x
17. Integrate the following with respect to x. $\frac{3x+2}{(x-2)(x-3)}$

Answer the following (any 4 out of 6)   **4 x 5 = 20**

18. Integrate $\frac{3x^2-2x+5}{(x-1)(x^2+5)}$ with respect to x
19. Evaluate $\int \left[1 - \frac{1}{x^2}\right] e^{\left(x+\frac{1}{x}\right)} dx$

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20. Integrate the following with respect to x. $\frac{6x+7}{\sqrt{3x^2+7x-1}}$

21. Integrate $(\log x)^2$ with respect to x

22. Evaluate the integral as the limit of the sum $\int_1^2 x^2\,dx$

23. Evaluate $\int \frac{8x+13}{\sqrt{4x+7}}\,dx$

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