DAV INSTITUTIONS, ODISHA ZONE- I

D.A.V. PUBLIC SCHOOL, BERHMAPUR, ODISHA

SUBJECT : MATHEMATICS
CLASS : XII
TOPIC : DEFINITE INTEGRAL

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WORKSHEET – 1 (BASIC)

SECTION – A (Each question carry 1 mark)

1. $\int_{-a}^{a} f(x)dx = 0$ if f is an ---------- function.

2. $\int_{0}^{\frac{\pi}{4}} sin2xdx$ is ----------.

3. $\int_{0}^{1} \sqrt{x(1-x)}dx$ equals

   (A) $\frac{\pi}{2}$ (B) $\frac{\pi}{4}$ (C) $\frac{\pi}{6}$ (D) $\frac{\pi}{8}$

4. The value of $\int_{-\pi}^{\pi} \sin^3 \mathrm{x} \cos^2 x\, dx$ is

   (A) $\frac{\pi^4}{2}$ (B) $\frac{\pi^4}{4}$ (C) 0 (D) None of these.

5. Evaluate $\int_{1}^{\sqrt{3}} \frac{dx}{\sqrt{1+x^2}}$.

SECTION – B (Each question carry 2 mark)

6. Evaluate : $\int_{0}^{\frac{\pi}{2}} cos2xdx$.

7. Evaluate : $\int_{0}^{1} \frac{e^x}{1+e^{2x}} dx$.

8. Evaluate : $\int_{2}^{3} \frac{x}{x^2+1} dx$.

9. Evaluate : $\int_{-5}^{5} |x+2| dx$.

10. Evaluate : $\int_{0}^{2} x\sqrt{2-x}dx$.

SECTION – C (Each question carry 4 mark)

11. Evaluate : $\int_{0}^{2} \frac{dx}{x+4-x^2}$.

12. Evaluate : $\int_{0}^{\frac{\pi}{4}} \log(1+tanx)\, dx$.

13. Evaluate : $\int_0^{\frac{\pi}{2}} \frac{sinx - cosx}{1+sinx\,.cosx}\,dx.$

14. Evaluate : $\int_0^{\pi} \frac{xdx}{a^2\cos^2 x + b^2\sin^2 x}$.

15. Evaluate : $\int_0^{\frac{\pi}{4}} \frac{sinx\,.cosx}{\cos^4 x + \sin^4 x}\,dx$.

16. Evaluate : $\int_0^{\frac{\pi}{4}} \frac{sinx + cosx}{9+16sin\,2x}\,dx$.

17. Evaluate : $\int_0^{\pi} \frac{xtanx}{secx + tanx}\,dx$.

18. Prove that : $\int_0^{\frac{\pi}{4}} 2\tan^3 x dx = 1 - log2$.

19. Find $\int_0^{\frac{\pi}{2}} \frac{dx}{1+sinx}$.

20. Evaluate : $\int_0^4 \frac{dx}{\sqrt{x^2+2x+3}}dx$.

21. Evaluate : $\int_0^{\frac{\pi}{2}} \left(\sqrt{tanx} + \sqrt{cotx}\right)dx$.

22. Evaluate : $\int_0^{\frac{\pi}{4}} \frac{sinx + cosx}{\cos^2 x + \sin^4 x}\,dx$.

23. Evaluate : $\int_0^{\pi} \frac{dx}{5+4cosx}$.

24. Evaluate : $\int_0^{\pi} cos2x.logsinxdx$.

25. Evaluate : $\int_0^1 \left\{xe^x + sin\frac{\pi x}{4}\right\}dx$.

SECTION – D (Each question carry 6 mark)

26. Evaluate : $\int_0^4 (x + e^{2x})dx$ as limit of sums.

27. Evaluate : $\int_0^1 e^{2-3x}dx$ as a limit of a sums.

28. Evaluate : $\int_0^4 (3x^2 + 2x + 1)dx$ as limit of sums.

29. Evaluate : $\int_{-\pi}^{\pi} (cosax - sinbx)^2 dx$.

30. Evaluate : $\int_0^{\frac{\pi}{2}} sin2x.\tan^{-1}(sinx)dx$.

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