

CLASS: XII

Slip Test 1

Time : 1.30 Hrs

SUBJECT: BUSINESS MATHEMATICS

Maxi. Marks: 50

I. Choose the correct answer**10X1=10**

1. $\int \frac{1}{x^3} dx$ a) $-\frac{3}{x^2} + c$ b) $-\frac{1}{2x^2} + c$ c) $\frac{-1}{3x^2} + c$ d) $\frac{-2}{x^2} + c$
2. $\int \frac{\sin 2x}{2 \sin x} dx$ a) $\sin x + c$ b) $\frac{1}{2} \sin x + c$ c) $\cos x + c$ d) $\frac{1}{2} \cos x + c$
3. $\int \frac{\log x}{x} dx$ a) $\frac{1}{2} (\log x)^2 + c$ b) $-\frac{1}{2} (\log x)^2 + c$ c) $\frac{-2}{x^2} + c$ d) $\frac{2}{x^2} + c$
4. $\int \frac{e^x}{e^x + 1} dx$ a) $\log \left| \frac{e^x}{e^x + 1} \right| + c$ b) $\log \left| \frac{e^x + 1}{e^x} \right| + c$ c) $\log |e^x| + c$ d) $\log |e^x + 1| + c$
5. $\int \frac{\sin^2 x - \cos^2 x}{\sin^2 x \cos^2 x} dx$ a) $\tan x + \cot x + c$ b) $\tan x + \operatorname{cosec} x + c$ c) $-\tan x + \cot x + c$ d) $\tan x - \sec x + c$
6. $\int e^x (\cos x - \sin x) dx$ a) $e^x \sin x + c$ b) $e^x \cos x + c$ c) $-e^x \cos x + c$ d) $-e^x \sin x + c$
7. Match the following

A) $\int_0^\pi x \sin x dx$	- i) $\int_0^{\pi/2} \log \cos x dx$
B) $\int_{-\pi}^\pi \cos^6 x dx$	- ii) π
C) $\int \frac{2x+1+\cos x}{x^2+x+\sin x} dx$	- iii) $\log x^2 + x + \sin x + c$
D) $\int_0^{\pi/2} \log \sin x dx$	- iv) $2 \int_0^\pi \cos^6 x dx$
8. Which of the following is not equal to $\int \tan x \sec^2 x dx$?

a) $\frac{1}{2} \tan^2 x$	b) $\frac{1}{2} \sec^2 x$	c) $\frac{1}{2 \cos^2 x}$	d) none of these
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9. $\int_{-\pi/2}^{\pi/2} (x^3 + x \cos x + \tan^5 x) dx$

a) 0	b) 2	c) π	d) 1
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10. $\int_0^{\pi/2} \cos x e^{\sin x} dx$

a) $e = 1$	b) $1 - e$	c) $e^{\pi/2} - 1$	d) $1 - e^{\pi/2}$
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II. Answer any four of the following questions**4x2=8**

11. Evaluate : $\Gamma \frac{9}{2}$
12. Evaluate : $\int \frac{e^{2x}-1}{e^{2x}+1} dx$
13. Evaluate : $\int_{-\pi/4}^{\pi/4} x^3 \cos^3 x dx$
14. Evaluate : $\int_0^3 \frac{e^x}{1+e^x} dx$
15. Evaluate : $\int e^x (x^2 + 2x) dx$
16. Evaluate : $\int \frac{e^{3 \log x}}{x^4 + 1} dx$

III. Answer any four of the following Questions**4x3=12**

17. Evaluate : $\int \sqrt{1 - \sin 2x} dx$
18. Evaluate : $\int \frac{3x^2 + 2x + 1}{x} dx$
19. If $f^{-1}(x) = 8x^3 - 2x$ and $f(2) = 8$, then find $f(x)$
20. Evaluate : $\int \frac{1}{\sqrt{x+1} + \sqrt{x-1}} dx$
21. Evaluate : $\int \frac{x^3 + 3x^2 - 7x + 11}{x^5} dx$
22. Evaluate : $\int \frac{dx}{e^x + 6 + 5e^{-x}}$

IV. Answer all the following questions**4x5=20**

23. a) Evaluate : $\int_0^\infty e^{-x^2} dx$

(OR)

- b) $\int_2^5 \frac{\sqrt{x}}{\sqrt{x} + \sqrt{7+x}} dx$
24. a) if $f(x) = \begin{cases} x^2, & -2 \leq x < 1 \\ x, & 1 \leq x < 2 \\ x - 4, & 2 \leq x \leq 4 \end{cases}$, then find the following

i) $\int_{-2}^1 f(x) dx$	ii) $\int_1^2 f(x) dx$	iii) $\int_2^3 f(x) dx$	iv) $\int_{-2}^{1.5} f(x) dx$	v) $\int_1^3 f(x) dx$
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(OR)

- b) Evaluate : $\int \frac{dx}{2x^2 + 6x - 8}$
25. a) Evaluate : $\int x^n \log x dx$

(OR)

- b) Evaluate : $\int \sqrt{4x^2 + 9} dx$
26. a) Evaluate the integral as the limit of a sum : $\int_1^2 (2x + 1) dx$

(OR)

- b) Evaluate $\int_1^2 (x^2 - 1) dx$ as the limit of a sum