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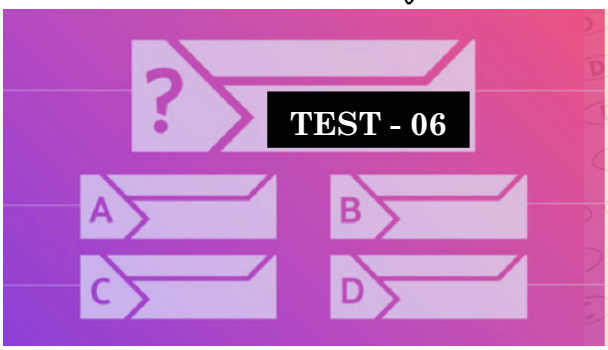

By O.P. GUPTA

MULTIPLE CHOICE TYPE QUESTIONS

For CBSE 2026 Exams - Mathematics (041) - Class 12

Topics : Indefinite Integrals **Max. Marks : 35**

☑ ***Select the correct option in the followings. Each question carries 1 mark.***

Q01. $\int \frac{dx}{2x-1} =$

(a) $\log|2x-1|+c$ (b) $\frac{1}{2}\log|2x-1|+c$ (c) $e^{2x-1}+c$ (d) $\frac{1}{2}e^{2x-1}+c$

Q02. Anti-derivative of $\cos^2 x + 3\sin^2 x$ is

(a) $2x-\frac{1}{2}\sin 2x+c$ (b) $2x+\frac{1}{2}\sin 2x+c$ (c) $2x+\sin 2x+c$ (d) $2x-\sin 2x+c$

Q03. $\int e^{3-2x}\,dx =$

(a) $e^{3-2x}+c$ (b) $e^{-2x}+c$ (c) $-\frac{1}{2}e^{3-2x}+c$ (d) $-\frac{1}{2}e^{-2x}+c$

Q04. $\int e^x \sin(e^x)\,dx =$

(a) $\cos(e^x)+c$ (b) $\sin(e^x)+c$ (c) $-e^x\cos(e^x)+c$ (d) $-\cos(e^x)+c$

Q05. If $\int e^{-2\log x}dx = f(x)+k$, then $f(x)$ is

(a) $\frac{x^3}{3}$ (b) $-\frac{1}{x}$ (c) $-\frac{2}{x}$ (d) $\frac{1}{x}$

Q06. The value of $\int \frac{\sin^2 x-\cos^2 x}{\sin^2 x\cos^2 x}dx$ is

(a) $\operatorname{cosec} x+\sec x+c$ (b) $\operatorname{cosec} x+\tan x+c$

(c) $\cot x+\tan x+c$ (d) $\tan x-\cot x+c$

Q07. If $f(x)+k=\int \frac{\sin x\cos x}{1+\cos 2x}dx$ then, $f(x)$ is

(a) $\log|1+\cos 2x|$ (b) $\frac{1}{2}\log|\cos x|$ (c) $-\frac{1}{2}\log|\cos x|$ (d) $-\frac{1}{4}\log|\cos x|$

Q08. Value of $\int \frac{\cos 2x-1}{\cos 2x+1}dx$ is

(a) $x-\tan x+c$ (b) $-\cot x-x+c$ (c) $x+\tan x+c$ (d) $\cot x-x+c$

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Q09. The value of $\int \frac{\cos 2x}{\cos x} dx$ is

(a) $2\sin x + \log|\sec x + \tan x| + k$ (b) $2\sin x - \log|\sec x + \tan x| + k$

(c) $2\sin x + \log\left|\tan\left(\frac{\pi}{4} + \frac{x}{2}\right)\right| + k$ (d) $2\sin x - \log|\sec x - \tan x| + k$

Q10. $\int \frac{dx}{(3-x)^2}$ is equal to

(a) $\frac{1}{(3-x)} + k$ (b) $-\frac{1}{(3-x)} + k$ (c) $-\frac{2}{(3-x)} + k$ (d) $\frac{2}{(3-x)} + k$

Q11. The value of $\int \sin^{-1} \cos x \, dx$ is

(a) $\frac{\pi x}{2} - \frac{x}{2} + c$ (b) $\frac{\pi}{2} - \frac{x^2}{2} + c$ (c) $\frac{\pi x}{2} - \frac{x^2}{2} + c$ (d) $c - \frac{\pi x}{2} + \frac{x^2}{2}$

Q12. The value of $\int \frac{x-1}{x^2} e^x dx$ is

(a) $e^x + \frac{1}{x} + k$ (b) $\frac{1}{x} e^x + k$ (c) $\frac{1}{x^2} e^x + k$ (d) $-\frac{1}{x} e^x + k$

Q13. The value of $\int \frac{2^x}{\sqrt{1-4^x}} dx$ is

(a) $2^x \sin^{-1}(2^x) + k$ (b) $\sin^{-1}(2^x) + k$ (c) $\frac{2^x \sin^{-1}(2^x)}{\log_e 2} + k$ (d) None of these

Q14. $\int \frac{e^{\tan^{-1}\sqrt{x}}}{\sqrt{x} + x\sqrt{x}} dx =$

(a) $\log\left|\tan^{-1}\sqrt{x}\right| + c$ (b) $\frac{1}{2} e^{\tan^{-1}\sqrt{x}} + c$ (c) $\frac{3}{2} e^{\tan^{-1}\sqrt{x}} + c$ (d) $2e^{\tan^{-1}\sqrt{x}} + c$

Q15. $\int \frac{e^{x-1} + x^{e-1}}{e^x + x^e} dx =$

(a) $\log\left|e^x + x^e\right| + c$ (b) $x \log\left|e^{x-1} + x^{e-1}\right| + c$

(c) $e^x + e \log|x| + c$ (d) $\frac{\log\left|e^x + x^e\right|}{e} + c$

Q16. $\int \frac{e^{2x} + 1}{e^{2x} - 1} dx =$

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

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Q17. If $\int \frac{dx}{x+x^5} = f(x) + C$, then the value of $\int \frac{x^4 dx}{x+x^5}$ equals

(a) $\log|x| + f(x) + c$ (b) $\log|x| - f(x) + c$ (c) $f(x) - \log|x| + c$ (d) $f(x) + 2\log|x| + c$

Q18. $\int \frac{3\tan\frac{x}{3} - \tan^3\frac{x}{3}}{1 - 3\tan^2\frac{x}{3}} dx =$

(a) $-\log|\cos x| + c$ (b) $\log|\tan x| + c$ (c) $\log|\cos x| + c$ (d) $\sec^2 x + c$

Q19. $\int \frac{a^{\sqrt{x}}}{\sqrt{x}} dx =$

(a) $\frac{2a^{\sqrt{x}}}{\log a} + c$ (b) $\frac{\log a}{a^{\sqrt{x}}} + c$ (c) $2a^{\sqrt{x}} \log a + c$ (d) $a^{\sqrt{x}} \log_a e + c$

Q20. $\int \frac{\cos^2 x}{\sin^4 x} dx$ equals

(a) $3\,\text{cosec}^3 x + c$ (b) $-3\sec^3 x + c$ (c) $-\frac{1}{3}\cot^3 x + c$ (d) $\frac{1}{3}\tan^3 x + c$

Q21. $\int \frac{\sin^6 x}{\cos^8 x} dx =$

(a) $\tan 7x + c$ (b) $\sec^7 x + c$ (c) $\frac{1}{7}\tan 7x + c$ (d) $\frac{1}{7}\tan^7 x + c$

Q22. $\int \frac{x}{1+x^4} dx =$

(a) $\log(1+x^4) + c$ (b) $\log(1+x^2) + c$ (c) $\tan^{-1}(x^2) + c$ (d) $\frac{1}{2}\tan^{-1}(x^2) + c$

Q23. $\int \frac{\cot x}{\sqrt{\sin x}} dx =$

(a) $-\frac{2}{\sqrt{\sin x}} + c$ (b) $-\frac{1}{2\sqrt{\sin x}} + c$ (c) $\frac{1}{2\sqrt{\sin x}} + c$ (d) $2\sqrt{\sin x} + c$

Q24. $\int \frac{1}{a\sec x + b\tan x} dx =$

(a) $\sec x - \frac{b}{a}\tan^{-1}\sin x + c$ (b) $\frac{b}{a}\text{cosec}\, x - a\tan^2 x + c$

(c) $\frac{1}{b}\log|a + b\sin x| + c$ (d) $\sin x - \frac{a^2}{b}\tan^{-1} x + c$

Q25. If $\int \frac{\cos 2x}{(\sin x + \cos x)^2} dx = f(x) + c$, then $f(x) =$

(a) $2\log|\sin x+\cos x|$ (b) $-\dfrac{1}{\sin x+\cos x}$ (c) $\log|\sin x+\cos x|$ (d) $\log|\cos x-\sin x|$

Q26. $\int\dfrac{\cos^3 x}{\sin^2 x+\sin x}dx=$

(a) $\tan^{-1}\sin x+\log x+c$ (b) $\log|\sin x|-\sin x+c$

(c) $\tan^{-1}\dfrac{\cos x}{1+\sin x}+c$ (d) $\log|1+\sin^2 x|+\cos x+c$

Q27. If $\int\dfrac{1}{(1+e^x)(1+e^{-x})}dx=f(x)+c$, then $f(x)=$

(a) $\dfrac{1}{1+e^x}$ (b) $-\dfrac{1}{1+e^x}$ (c) $\dfrac{1}{e^{-x}+1}$ (d) $\dfrac{1}{(1+e^x)^2}$

Q28. $\int\dfrac{dx}{\sqrt{e^{2x}-1}}=$

(a) $\sin^{-1}e^x+c$ (b) $\cos^{-1}e^x+c$ (c) $\sec^{-1}e^x+c$ (d) $\tan^{-1}e^x+c$

Q29. $\int\dfrac{10x^9+10^x\log_e 10}{10^x+x^{10}}dx=$

(a) $10^x\log|1+x^{10}|+c$ (b) $(x+1)\log|x^9+10^x|+c$

(c) $\log|x^{10}+10^x|+c$ (d) $\dfrac{\log|x^{10}+10^x|}{\log x}+c$

Q30. $\int e^x(\cot x-\cot^2 x)dx=$

(a) $e^x\cot^2 x+c$ (b) $e^x\cot x+c$ (c) $e^x(1+\cot x)+c$ (d) $e^x(\cot x-1)+c$

Q31. $\int\dfrac{dx}{(1-x)\sqrt{x}}=$

(a) $\dfrac{1}{2}\log\left|\dfrac{1+\sqrt{x}}{1-\sqrt{x}}\right|+c$ (b) $-\dfrac{1}{2}\log\left|\dfrac{1+\sqrt{x}}{1-\sqrt{x}}\right|+c$ (c) $\log\left|\dfrac{1-\sqrt{x}}{1+\sqrt{x}}\right|+c$ (d) $\log\left|\dfrac{1+\sqrt{x}}{1-\sqrt{x}}\right|+c$

Q32. If $\int x\sin x dx=-x\cos x+\alpha$, then the value of α is

(a) $-2\sin x+c$ (b) $\sin x+c$ (c) $\cos x+c$ (d) $-\sin x+c$

*Question numbers **33** to **35** are Assertion and Reason based questions. Two statements are given, one labelled **Assertion (A)** and the other labelled **Reason (R)**. Select the correct answer from the codes (a), (b), (c) and (d) as given below.*

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
(b) Both Assertion (A) and Reason (R) are true and Reason (R) is **not** the correct explanation of Assertion (A).
(c) Assertion (A) is true but Reason (R) is false.
(d) Assertion (A) is false but Reason (R) is true.

Q33. **Assertion (A) :** If $\int xe^{2x}dx=e^{2x}f(x)+c$, then $f(x)=\dfrac{2x-1}{4}$.

Reason (R) : $\int e^x\left[f(x)+f'(x)\right]dx=e^x f(x)+c$.

Q34. **Assertion (A) :** $\int \frac{1}{\log_x \sqrt{x}} dx = 2x + c$.

Reason (R) : $\int [f(x)]^n \times f'(x)\, dx = n \times [f(x)]^{n-1} + c$.

Q35. **Assertion (A) :** $\int \frac{d(1+\log x)}{\sin^2(1+\log x)} = -\cot(1+\log x) + c$.

Reason (R) : $\int \frac{f'(x)}{f(x)} dx = \log|f(x)| + c$.

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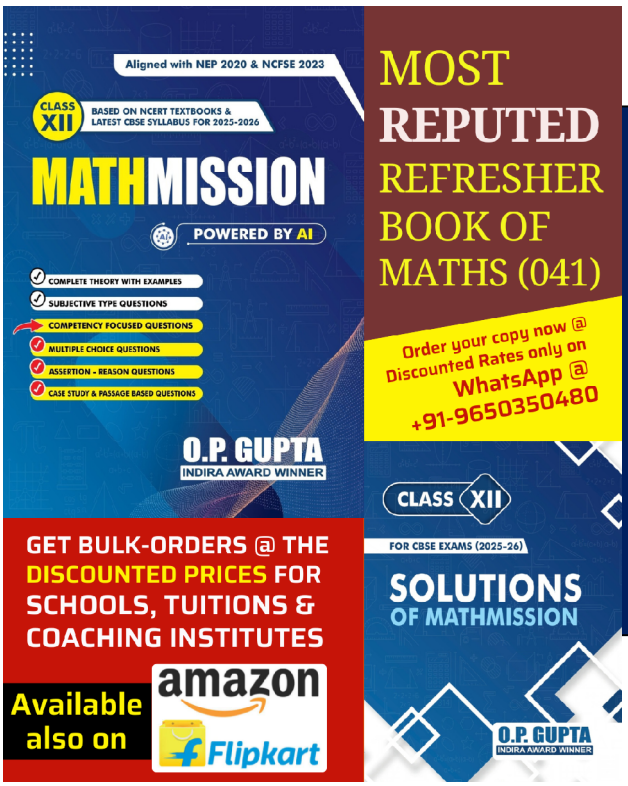

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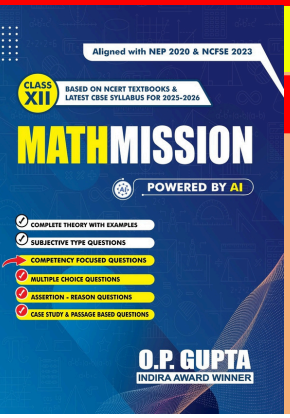

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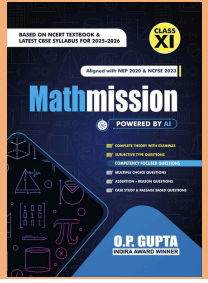

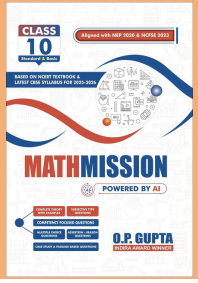

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