Answer Key to Integral Calculus - 1

Level – 0	Based on CBSE Pattern

1. $x-\log\left|(2x+3)^2\right|+C$ **2.** $\log\left|\left(x^2+3x\right)\right|+C$ **3.** $\frac{x^2}{2}-x+3\log|x+1|+C$

4. $\frac{x^3}{3}+C$ **5.** $\log\left|(x+\sin x)\right|+C$ **6.** $\tan\frac{x}{2}+C$

7. $\frac{\tan^5 x}{5}+\frac{\tan^3 x}{3}+C$ **8.** $x+C$ **9.** $-2\cos\frac{x}{2}+2\sin\frac{x}{2}+C$

10. $2\left[\frac{x\sqrt{x}}{3}-\frac{x}{2}+\sqrt{x}-\log\left|\left(\sqrt{x}+1\right)\right|\right]+C$ **11.** $a\sin^{-1}\left(\frac{x}{a}\right)-\sqrt{a^2-x^2}+C$

12. $\frac{4}{3}x^{3/4}-\log|\left(1+x^{3/4}\right)+C$ **13.** $-\frac{1}{3}\left(1+\frac{1}{x^2}\right)^{3/2}+C$

14. $\frac{1}{3}\sin^{-1}\left(\frac{3x}{4}\right)+C$ **15.** $\frac{1}{\sqrt{2}}\sin^{-1}\left(\frac{4t-3}{3}\right)+C$

16. $3\sqrt{x^2+9}-\log\left|x+\sqrt{x^2+9}\right|+C$

17. $\frac{x-1}{2}\sqrt{5-2x+x^2}+2\log\left|x-1+\sqrt{5-2x+x^2}\right|+C$ **18.** $\frac{1}{4}\left[\left|\log\left|x^2-1\right|-\log\left|x^2+1\right|\right|\right]+C$

19. $\frac{1}{4}\log\left|\frac{1+x}{1-x}\right|-\frac{1}{2}\tan^{-1}x+C$ **20.** $\frac{x-a}{2}\sqrt{2ax-x^2}+\frac{a^2}{2}\sin^{-1}\left(\frac{x-a}{a}\right)+C$

21. $\sin^{-1}x.\frac{x}{\sqrt{1-x^2}}+\log\left|\sqrt{1-x^2}\right|+C$ **22.** $-\frac{1}{2}\sin 2x-\sin x+C$

23. $\tan x-\cot x-3x+C$ **24.** $\frac{2}{3}\sin^{-1}\sqrt{\frac{x^3}{a^3}}+C$

25. $2\sin x+x+C$ **26.** $\frac{1}{2}\sec^{-1}\left(x^2\right)+C$

27. $\frac{1}{7}\log\left|\frac{x-2}{x+2}\right|+\frac{\sqrt{3}}{7}\tan^{-1}\frac{x}{\sqrt{3}}+C$ **28.** $\frac{1}{a^2-b^2}\left[a\tan^{-1}\frac{x}{a}-b\tan^{-1}\frac{x}{b}\right]$

29. $\log\left|\frac{\sqrt{x-3}}{(x-1)^{1/6}(x+2)^{1/3}}\right|+C$ **30.** $xe^{\tan^{-1}x}+C$

31. $a\left[\frac{x}{a}\tan^{-1}\sqrt{\frac{x}{a}}+\tan^{-1}\sqrt{\frac{x}{a}}\right]+C$ **32.** $\frac{e^{-3x}}{24}\left[\sin 3x-\cos 3x\right]+\frac{3e^{-3x}}{40}\left[\sin x-3\cos x\right]+C$

33. $\frac{1}{\sqrt{2}}\tan^{-1}\left(\frac{\tan x-1}{\sqrt{2\tan x}}\right)+\frac{1}{2\sqrt{2}}\log\left|\frac{\tan x-\sqrt{2\tan x}+1}{\tan x+\sqrt{2\tan x}+1}\right|+C$ **34.** A **35.** C **36.** A

37. D **38.** C **39.** D **40.** D **41.** D **42.** A