Q.1 Solve the integral value $8x^3 + 1$

(A) $2x^4 + x + C$ (B) $2x^6 - 5x + C$

(C) $2x^4 - x + C$ (D) $2x^4 + x^2C$

Q.2 Determine $\int 7x^2 - x^3 + 2x dx$.

(A) $\frac{7x^3}{3} + \frac{x^4}{5} - \frac{2x^2}{2} + c$ (B) $\frac{7x^3}{3} + \frac{x^4}{4} + \frac{2x^2}{2} + c$

(C) $\frac{7x^5}{9} - \frac{x^4}{4} + \frac{2x^2}{2} + c$ (D) $\frac{7x^5}{3} - \frac{x^4}{4} + x^2 + c$

Q.3 Find the integral of $2\sin 2x + 3$.

(A) $\sin 2x + 3x + C$ (B) $-\cos 2x - 3x^3 + C$

(C) $-\cos 2x + 3x + C$ (D) $\cos 2x - 3x + 12 + C$

Q.4 Solve the integral of $\int 3e^x + \frac{2}{x} + x^3 dx$.

(A) $3e^3x + \frac{2}{x} - \frac{x^4}{4} + c$ (B) $3e^x + 2\log x + \frac{x^4}{4} + c$

(C) $e^x + 2\log x + \frac{x^4}{4} + c$ (D) $3e^x - \frac{2}{x^2} + \frac{x^4}{4} + c$

Q.5 Determine the integral of $\frac{4x^4 - 3x^2}{x^3}$.

(A) $7x^2 - 3\log x^3 + C$ (B) $2x^2 - 3\log x + C$

(C) $x^2 - \log x + C$ (D) $2x^2 + 3\log x + C$

Q. 6 Evaluate $\int 3\cos x + \frac{1}{x} dx$.

(A) $3\sin x - \frac{1}{x} + c$ (B) $2\sin x + \frac{1}{x^3} + c$

(C) $3\sin 3x + \frac{1}{x} + c$ (D) $\sin x - \frac{1}{x^2} + c$

Q.7 Solve. $\int (2+x)x\sqrt{x} dx$

(A) $\frac{4x^{\frac{5}{2}}}{5} + \frac{2x^{\frac{7}{2}}}{9} + c$ (B) $\frac{4x^{\frac{5}{2}}}{5} - \frac{2x^{\frac{7}{2}}}{7} + c$

(C) $\frac{4x^{\frac{5}{2}}}{6} + \frac{2x^{\frac{7}{2}}}{7} + c$ (D) $-\frac{4x^{\frac{5}{2}}}{5} + \frac{2x^{\frac{7}{2}}}{7} + c$

Q.8 Find. $\int 7x^8 - 4e^{2x} - \frac{2}{x^2}dx$

(A) $\frac{7x^9}{9} - 2e^{2x} + \frac{2}{x} + c$ (B) $\frac{7x^9}{9} + 2e^{2x} + \frac{2}{x} + c$

(C) $\frac{7x^9}{9} - 2e^{2x} + \frac{2}{x^2} + c$ (D) $\frac{7x^9}{9} + 2e^{2x} - \frac{4}{x} + c$

Q.9 Determine the integral $\int \sin 2x + e^3x - \cos 3x dx$

(A) $-\frac{\sin 2x}{2} + \frac{e^{3z}}{3} - \frac{\sin 3x}{3} + c$ (B) $-\frac{\cos 2x}{2} + \frac{e^{3x}}{3} - \frac{\sin 3x}{3} + c$

(C) $-\frac{\cos 2x}{2} + \frac{e^{3x}}{3} - \frac{\cos 3x}{3} + c$ (D) $-\frac{\cos 2x}{2} - \frac{e^{3z}}{3} - \frac{\cos 3x}{3} + c$

Q.10 Determine the integral $(ax^2 + b)^2$.

(A) $\frac{a^2x^5}{5} + b^2x + \frac{2abx^2}{3} + c$ (B) $-\frac{a^2x^5}{5} - b^2x + \frac{2abx^3}{3} + c$

(C) $\frac{b^2x^5}{5} + b^2x + \frac{27x^3}{3} + c$ (D) $\frac{a^2x^5}{5} + x + \frac{2abx^3}{5} + c$

Q.11 Integrate $2\sin^2 x + \cos^2 x$

(A) $\frac{3x}{2} + \frac{\sin 2x}{4} + C$ (B) $\frac{3x}{2} - \frac{\sin 2x}{4} + C$

(C) $\frac{x}{2} + \frac{\sin 2x}{4} + C$ (D) $\frac{3x}{4} - \frac{2\sin 2x}{2} + C$

Q.12 Integrate $8\tan^3 x \sec^2 x$

(A) $2\tan^4 x + C$ (B) $4\cot^4 x + C$

(C) $2\tan^3 x + C$ (D) $\tan^4 x + C$

Q.13 Evaluate the integral of $\frac{\cos^2 x - \sin^2 x}{7\cos^2 x \sin^2 x}$.

(A) $-\frac{1}{7}(\cot x - \tan x) + C$ (B) $-\frac{1}{7}(\cot x - 2\tan x) + C$

(C) $-\frac{1}{7}(\cot x + \tan x) + C$ (D) $-\frac{1}{7}(2\cot x + 3\tan x) + C$

Q.14 Find $\int \sin^2(8x + 5)dx$

(A) $\frac{x}{4} + \frac{\sin(16x + 10)}{32} + C$ (B) $\frac{x}{2} - \frac{\cos(16x + 10)}{32} + C$

(C) $\frac{x}{2} - \frac{\sin(16x + 10)}{32} + C$ (D) $\frac{x}{2} + \frac{\cos(16x + 5)}{32} + C$

Q.15 Solve $\int \frac{5\cos^2 x}{1 + \sin x}dx$.

(A) $-3(x + \cos x) + C$ (B) $5(x + \cos x) + C$

(C) $5(-x + \sin x) + C$ (D) $5(x - \cos x) + C$

Q.16 Solve the integral of $\frac{e^{-x}(1 - x)}{\sin^2(xe^{-x})}$.

(A) $\cot xe^{-x} + C$ (B) $-\cot xe^{-x} + C$

(C) $-\cot xe^{x} + C$ (D) $-\cos^2 xe^{-x} + C$

Q.17 Integrate $\frac{2\cos 2x}{(\cos x - \sin x)^2}$.

(A) $-\log(1+2\sin 2x)+C$

(B) $\frac{1}{4}\log(1-\sin 2x)+C$

(C) $-\frac{1}{4}\log(1+\cos 2x)+C$

(D) $-\log(1-\sin 2x)+C$

Q.18 Integrate $\sin^3(x+2)$

(A) $\frac{3}{4}(\sin(x+2))+\frac{1}{12}\cos(3x+6)+C$

(B) $-\frac{3}{4}(\cos(x+2))-\frac{1}{5}\cos(3x+6)+C$

(C) $-\frac{3}{4}(\cos(x+2))+\frac{1}{12}\cos(3x+6)+C$

(D) $-\frac{3}{4}(\cos(x+2))+\frac{1}{12}\sin(x+2)+C$

Q.19 Integrate $2x\cos(x^2+3)$

(A) $\sin(x^2+3)+C$

(B) $\sin^2(x^2+3)+C$

(C) $\cot(x^2+3)+C$

(D) $-\sin(x^2+3)+C$

Q.20 Find $2\sin^3 x+1dx$.

(A) $\frac{3}{2}-\frac{\cos 3x}{6}+x+C$

(B) $-\frac{3}{2}\cos x+\frac{\cos 3x}{6}+x+C$

(C) $-\frac{3}{2}\cos x-\frac{\cos 3x}{6}-x+C$

(D) $-\frac{3}{2}\cos x+\frac{\cos 3x}{6}+C$

Q.21 Find $\int\frac{2dx}{x^2-64}$.

(A) $-\log\left|\frac{x+8}{x-8}\right|+C$

(B) $\frac{3}{2}\log\left|\frac{x+8}{x-8}\right|+C$

(C) $\log\left|\frac{x+8}{x-8}\right|+C$

(D) $\frac{1}{8}\log\left|\frac{x-8}{x+8}\right|+C$

Q.22 Solve $\int\frac{8dx}{x^2-16}$

(A) $\log\left|\frac{4+x}{4-x}\right|+C$

(B) $-\log\left|\frac{4+x}{4-x}\right|+C$

(C) $8\log\left|\frac{4+x}{4-x}\right|+C$

(D) $\frac{1}{8}\log\left|\frac{4+x}{4-x}\right|+C$

Q.23 Determine $\int\frac{3dx}{9+x^2}$

(A) $\tan^{-1}\frac{x}{2}+C$

(B) $\tan^{-1}\frac{x}{3}+C$

(C) $\tan^{-1}\frac{x}{5}+C$

(D) $\tan^{-1}\frac{x}{4}+C$

Q.24 Evaluate $\int \frac{10dx}{\sqrt{x^2-25}}$.

(A) $-\log\left|x+\sqrt{x^2-25}\right|+C$ (B) $\log\left|x+\sqrt{x^2-25}\right|+C$

(C) $10\log\left|x+\sqrt{x^2-25}\right|+C$ (D) $10-\log\left|x+\sqrt{x^2-25}\right|+C$

Q.25 Solve $\int \frac{dx}{\sqrt{5-x^2}}$

(A) $\sin^{-1}\frac{x}{\sqrt{5}}+C$ (B) $2\sin^{-1}\frac{x}{\sqrt{5}}+C$

(C) $-\sin^{-1}\frac{x}{\sqrt{5}}+C$ (D) $\sin^{-1}\frac{x}{5}+C$

Q.26 Integrate $\frac{dx}{\sqrt{x^2+36}}$

(A) $-\log\left|x^2+\sqrt{x^2+36}\right|+C$ (B) $\log\left|2x+\sqrt{x^2+36}\right|+C$

(C) $-\log\left|x^2+\sqrt{x^2+6}\right|+C$ (D) $\log\left|x^2+\sqrt{x^2+36}\right|+C$

Q.27 Solve $\int \frac{dx}{x^2-8x+20}$

(A) $\frac{1}{2}\tan^{-1}\frac{x^2-8x}{2}+C$ (B) $\frac{5}{2}\tan^{-1}\frac{x-4}{2}+C$

(C) $\frac{1}{2}\tan^{-1}\frac{x-4}{2}+C$ (D) $x-\frac{1}{2}\tan^{-1}\frac{x-4}{2}+C$

Q.28 Determine $\int \frac{(x+3)}{2x^2+6x+7}dx$

(A) $\frac{1}{4}\log(2x^2+6x+7)+\frac{3}{4}\left(\frac{1}{\sqrt{2}}\tan^{-1}\frac{2x+3}{2\sqrt{2}}\right)+C$

(B) $\frac{1}{4}\log(2x^2+6x+7)-\frac{3}{4}\left(\frac{1}{\sqrt{2}}\tan^{-1}\frac{2x+3}{2\sqrt{2}}\right)+C$

(C) $\log(2x^2+6x+7)+\left(\tan^{-1}\frac{2x+3}{2\sqrt{2}}\right)+C$

(D) $-\log(2x^2+6x+7)-\frac{3}{4}\left(\frac{1}{\sqrt{2}}\tan^{-1}\frac{2x+3}{2\sqrt{2}}\right)+C$

Q.29 Solve $\int \frac{dx}{x^3+4}$

(A) $\frac{7}{6}\log\left|\frac{x-9}{x+9}\right|+C$ (B) $\frac{7}{9}\log\left|\frac{x-3}{x+3}\right|+C$

(C) $-\frac{7}{6}\log\left|\frac{x+3}{x-3}\right|+C$ (D) $\frac{7}{6}\log\left|\frac{x-3}{x+3}\right|+C$

Q.30 Find $\int \frac{dx}{x^2+4}$

(A) $-\tan^{-1}\frac{x}{4}+C$ (B) $\frac{1}{2}\tan^{-1}\frac{x}{2}+C$

(C) $\frac{3}{4}\tan^{-1}x+C$ (D) $\frac{3}{4}\tan^{-1}\frac{3x}{2}+C$

Q.31 Which type of rotational function $\frac{px+q}{(x-a)(x-b)}, a \neq b$ does it signify?

(A) $\frac{A}{(x-a)}$ (B) $\frac{B}{(x-b)}$

(C) $\frac{A+B}{(x-b)(x-b)}$ (D) $\frac{A}{(x-a)}+\frac{B}{(x-b)}$

Q.32 Determine $\int \frac{x^2+1}{x^2-5x+6}dx$.

(A) $x-5\log|x-2|+10\log|x-3|+c$

(B) $x-3\log|x-2|+5\log|x-3|+c$

(C) $x-10\log|x-2|+5\log|x-3|+c$

(D) $x-5\log|x-5|+10\log|x-10|+c$

Q.33 Solve. $\int \frac{x^2+1}{x^2-5x+6}dx$.

(A) $\log\left|\frac{x+1}{x+2}\right|+C$ (B) $\log\left|\frac{x-1}{x+2}\right|+C$

(C) $\log\left|\frac{x+2}{x+1}\right|+C$ (D) $\log\left|\frac{x+1}{x-2}\right|+C$

Q.34 To transform an improper fraction into a proper fraction, you can ____

(A) Multiplication (B) Division (C) Addition (D) Subtraction

Q.35 $\int \frac{dx}{x(x^2+1)}$ Equal.

(A) $\log|x|-\frac{1}{2}\log(x^2+1)+c$ (B) $\log|x|+\frac{1}{2}\log(x^2+1)+c$

(C) $-\log|x|+\frac{1}{2}\log(x^2+1)+c$ (D) $\frac{1}{2}\log|x|+(x^2+1)+c$

Q.36 $\int \frac{dx}{(x^2-9)}$ Equal.

(A) $\frac{1}{6}\log\frac{x+3}{x-3}+C$ (B) $\frac{1}{6}\log\frac{x-3}{x+3}+C$

(C) $\frac{1}{5}\log\frac{x+3}{x-3}+C$ (D) $\frac{1}{3}\log\frac{x+3}{x-3}+C$

Q.37 Which form does the rotational function $\frac{px+q}{(x-a)^2}$ represent?

(A) $\frac{A}{(x-a)}+\frac{B}{(x-a)^2}$ (B) $\frac{A}{(x-a)^2}+\frac{B}{(x-a)}$

(C) $\frac{A}{(x-a)}-\frac{B}{(x-a)^2}$ (D) $\frac{A}{(x-a)}-\frac{B}{(x-a)}$

Q.38 Determine the characteristics or type of the expression $(x+1)^2$.

(A) Liner equation (B) Cubic Equation

(C) Identity (D) Imaginary

Q.39 How many values of x satisfy the equation $(x+2)(x+4) = x^2+6x+8$?

(A) Two value of x (b) One value of x

(c) All value of x (d) No value of x

Q.40 Integrate x^{2x}.

(A) $\frac{e^{2x}}{4}\left(x-\frac{1}{4}\right)+C$ (B) $\frac{e^{2x}}{4}(2x-1)+C$

(C) $\frac{e^{2x}}{2}(2x-1)+C$ (D) $\frac{e^{2x}}{4}(x+1)+C$

Q.41 Determine $\int 7\log x \bullet x dx$.

(A) $\frac{7}{2}(\log x-x)+C$ (B) $-\frac{7}{2}(x^2\log x-x^3)+C$

(C) $\frac{7}{2}(x^2\log x-x)+C$ (D) $(x^2\log x+x)+C$

Q.42 Integrate $(x^2+9)e^{2xdx}$.

(A) $\frac{e^2}{2}\left(x^2+x-\frac{48}{4}\right)+C$ (B) $\frac{e^{2x}}{2}\left(x^2+x-\frac{35}{4}\right)+C$

(C) $\frac{e^{2x}}{2}\left(x^2+x-\frac{48}{4}\right)+C$ (D) $\frac{e^x}{2}\left(x^2+x-\frac{25}{4}\right)+C$

Q.43 Integrate $\int \log x^2 dx$.

(A) $\log x^2+x+C$ (B) $2x\log x^2-2x+C$

(C) $x\log x^2-1+C$ (D) $x\log x^2+x+C$

Q.44 Integrate $2x\sin 2x$.

(A) $\frac{\sin 2x}{2}+x\cos 2x+C$ (B) $\frac{\sin 2x}{2}-\cos 2x+C$

(C) $\frac{\cos 2x}{2}-x\cos 2x+C$ (D) $\frac{\sin 2x}{2}-x\cos 2x+C$

Q.45 Integrate $3\sec^2 x\log(\tan x)dx$.

(A) –log (tan x) (tan x –1) +C (B) log (tan x) (secx+1) +C

(C) tan x (log (tan x) –1) + C (D) tan x (log (sec x) + 1) + C

Q.46 Solve $\int 10\log x-x^2 dx$.

(A) $\frac{10x^3}{3}\left(x^3\log x-\frac{x^3}{3}\right)+C$ (B) $\frac{10x^3}{3}\left(\log x-\frac{x^3}{3}\right)+C$

(C) $-\frac{10x^3}{3}\left(x^3\log x-\frac{x^3}{3}\right)+C$ (D) $\left(x^3\log x-\frac{x^3}{3}\right)+C$

Q.47 Determine $\int 2x^3e^{x^2}dx$.

(A) $-e^{x^2}(x^2+2)+C$ (B) $e^{x^2}(x^2-1)+C$

(C) $2e^{x^2}(x^2+1)+C$ (D) $e^{x^2}(x-1)+C$

Q.48 Integrate $5x\sin 3x$.

(A) $-\frac{5}{3}x\cos 3x+\frac{5}{9}\tan 3x+C$ (B) $\frac{5}{3}x\cos 3x-\frac{5}{9}\tan 3x+C$

(C) $x\cos 3x+\frac{5}{9}\sin 3x+C$ (D) $-\frac{5}{3}x\cos 3x+\frac{5}{9}\sin 3x+C$

Q.49 Find $\int \sin x\log(\cos x)dx$.

(A) $\cos x(\log(\sin x)-1)+C$ (B) $\sin x(\log(\cos x)+1)+C$

(C) $\cos x(\log(\cos x)+1)+C$ (D) $\cos x(\log(\cos x)-1)+C$

Q.50 The value of $\int \frac{x^2+5x-1}{\sqrt{x}}dx$ equals

(A) $\frac{2}{5}x^{5/2}+\frac{10}{3}x^{3/2}-2x^{1/2}+c$ (B) $\frac{2}{5}x^{5/2}-\frac{10}{3}x^{3/2}+2x^{1/2}+c$

(C) $\frac{4}{5}x^{5/2}-\frac{10}{3}x^{3/2}+c$ (D) $\frac{2}{5}x^{5/2}+\frac{10}{3}x^{3/2}+2x^{1/2}+c$

Q.51 The value of $\int \frac{e^{5\log x}-e^{3\log x}}{e^{4\log x}-e^{2\log x}}dx$ equals

(A) $x+c$ (B) $\frac{x^2}{2}+c$

(C) $\frac{x^3}{3}+c$ (D) $\log x+c$

Q.52 The value of $\int \tan^2 x dx$ equals

(A) $\tan x+x+c$ (B) $\tan x-x+c$

(C) $\cot x+x+c$ (D) $-\tan x+x+c$

Q.53 The value of $\int \frac{dx}{\sin^2 x\cdot\cos^2 x}$ equals

(A) $-(\tan x+\cot x)+c$ (B) $\tan x+\cot x+c$

(C) $\tan x-\cot x+c$ (D) $\cot x-\tan x+c$

Q.54 The value of $\int \frac{\sin^6 x+\cos^6 x}{\sin^2 x\cdot\cos^2 x}dx$ equals

(A) $-(\tan x+\cot x)+c$ (B) $\tan x+\cot x+c$

(C) $-\tan x+\cot x+c$ (D) $\tan x-\cot x-3x+c$

Q.55 The value of $\int \frac{\cos x-\cos 2x}{1-\cos x}dx$ equals

(A) $x+2\sin x+c$ (B) $x-2\sin x+c$

(C) $-x+2\cos x+c$ (D) $x-2\cos x+c$

Q.56 The value of $\int \frac{x^3}{x+2}dx$ equals

(A) $\frac{x^3}{3}+x^2+4x-8\log|x+2|+c$ (B) $\frac{x^3}{3}-x^2+4x-8\log|x+2|+c$

(C) $\frac{x^3}{3}+x^2-4x-8\log|x+2|+c$ (D) $\frac{x^3}{3}+x^2+4x+8\log|x+2|+c$

Q.57 If $\int \frac{(\sqrt{x})^5}{(\sqrt{x})^7+x^6}dx=a\log(\frac{x^k}{1+x^k})+c$, then a and k are

(A) $\frac{2}{5},\frac{5}{2}$ (B) $\frac{1}{5},\frac{2}{5}$

(C) $\frac{5}{2},\frac{1}{2}$ (D) $\frac{2}{5},\frac{1}{2}$

Q.58 The value of $\int \frac{dx}{(1+\sqrt{x})\sqrt{x-x^2}}$, is equal to

(A) $\frac{2(\sqrt{x}+1)}{\sqrt{1-x}}+c$ (B) $\frac{2(\sqrt{x}-1)}{\sqrt{1-x}}+c$

(C) $\frac{-2(\sqrt{x}-1)}{\sqrt{1-x}}+c$ (D) $\frac{2(\sqrt{x}+1)}{\sqrt{x-1}}+c$

Q.59 The value of $\int \frac{dx}{x(x^n+1)}$, is equal to

(A) $-\frac{1}{n}\log\left|\frac{x^n+1}{x^n}\right|+c$ (B) $n\log\left|\frac{x^n+1}{x^n}\right|+c$

(C) $-n\log\left|\frac{x^n}{1+x^n}\right|+c$ (D) $\frac{1}{n}\log\left|\frac{x^n+1}{x^n}\right|+c$

Q.60 The value of $\int \frac{xdx}{(x+2)\sqrt{x+1}}$ equals

(A) $2\sqrt{x+1}-\tan^{-1}\sqrt{x+1}+c$ (B) $2\sqrt{x+1}-2\tan^{-1}\sqrt{x+1}+c$

(C) $2\sqrt{x+1}-4\tan^{-1}\sqrt{x+1}+c$ (D) $2\sqrt{x+1}+2\tan^{-1}\sqrt{x+1}+c$

Q.61 The value of $\int \frac{x}{\sqrt{x^4+x^2+1}}dx$ equals

(A) $\frac{1}{2}\log(x^2+\sqrt{x^4+x^2+1})+c$ (B) $\frac{1}{2}\log((x^2+\frac{1}{2})+\sqrt{x^4+x^2+1})+c$

(C) $\log((x^2+\frac{1}{2})+\sqrt{x^4+x^2+1})+c$ (D) $\frac{1}{4}\log((x^2+\frac{1}{2})+\sqrt{x^4+x^2+1})+c$

Q.62 The value of $\int \frac{dx}{(1-x^2)^{3/2}}$ equals

(A) $x\sqrt{1-x^2}+c$ (B) $\frac{x}{2\sqrt{1-x^2}}+c$

(C) $\frac{x}{\sqrt{1-x^2}}+c$ (D) $\frac{2x}{\sqrt{1-x^2}}+c$

Q.63 The value of $\int \frac{co}{\sqrt{\sin^2 x-2si\ \ x-3}}dx$ equals

(A) $\log|(\sin x-1)+\sqrt{\sin^2 x-2\sin x-3}|+c$

(B) $\log|(\sin x-1)-\sqrt{\sin^2 x-2\sin x-3}|+c$

(C) $\log|(\sin x+1)+\sqrt{\sin^2 x+2\sin x-3}|+c$

(D) $|\log|(\sin x-2)|+c$

Q.64 The value of $\int \frac{3+2co\ \ x}{(2+3co\ \ x)^2}dx$ is equal to

(A) $\frac{\sin x}{2+3\cos x}+c$ (B) $\frac{2\sin x}{2+3co\ \ x}+c$

(C) $\frac{3\cos x}{2+\cos x}+c$ (D) $\frac{3\sin x}{2+\sin x}+c$

Q.65 If $\int \frac{\sqrt{\cot x}}{\sin x\cdot\cos x}dx = A\sqrt{\cot x}+B$, then A is equal to

(A) 1 (B) 2

(C) –1 (D) –2

Q.66 $\int (xe^{\log\sin x}-\cos x)dx$ is equal to

(A) $x\cos x+c$ (B) $\sin x-x\cos x+c$

(C) $-e^{\log x}\cdot\cos x+c$ (D) $\sin x+e^x+c$

Q.67 The value of $\int e^{3x}\left(\frac{2+3\sin 2x}{1+\cos 2x}\right)dx$ equals

(A) $e^{3x}\cdot\cot x+c$ (B) $e^{3x}\cdot\tan x+c$

(C) $e^{3x}\cdot\sin x+c$ (D) $e^{3x}\cdot\cos x+c$

Q.68 If the derivative of f(x) w.r.t. x is $\frac{\frac{1}{2}-\sin^2 x}{f(x)}$

then f(x) is a periodic function with fundamental period

(A) π (B) 2π

(C) $\frac{\pi}{2}$ (D) $\frac{3\pi}{2}$

Q.69 The value of $\int \frac{\sin\theta+\cos\theta}{\sqrt{\sin 2\theta}}d\theta$ equals

(A) $\sin^{-1}(\sin\theta+\cos\theta)+c$ (B) $\sin^{-1}(\sin\theta-\cos\theta)+c$

(C) $\log(\sin\theta+\sqrt{\sin\theta+\cos\theta})+c$ (D) $\sqrt{\sin 2\theta}+c$

Q.70 The value of $\int \sec^4 x\cdot\tan x dx$ equals

(A) $\tan x+\tan^3 x+c$ (B) $\frac{\tan^2 x}{2}+\frac{\tan^4 x}{4}+c$

(C) $\frac{\tan^2 x}{2}+\frac{\tan^3 x}{3}+c$ (D) $\tan x+\frac{\tan^3 x}{3}+c$

Q.71 The value of $\int \frac{\sin x}{\sin 3x} dx$ equals

(A) $\frac{1}{2\sqrt{3}} \sin^{-1}(\sqrt{3} - \tan x) + c$ (B) $\frac{1}{2\sqrt{3}} \log(\frac{\sqrt{3}+ta\ x}{\sqrt{3}-ta\ x}) + c$

(C) $\frac{-1}{2\sqrt{3}} \log(\frac{\sqrt{3}+\tan x}{\sqrt{3}-\tan x}) + c$ (D) $\frac{1}{4\sqrt{3}} \log(\frac{\sqrt{3}+\tan x}{\sqrt{3}-\tan x}) + c$

Q.72 The value of $\int \frac{dx}{\sqrt{3}\sin x+\cos x}$ equals

(A) $\frac{1}{2} \log|\tan(\frac{x}{2} + \frac{\pi}{12})| + c$ (B) $\frac{1}{3} \log|\tan(\frac{x}{2} + \frac{\pi}{6})| + c$

(C) $\frac{1}{4} \log|\tan(\frac{x}{2} + \frac{\pi}{4})| + c$ (D) $\log|\tan x| + c$

Q.73 The value of $\int \frac{\sin 2x}{\sin^4 x+\cos^4 x} dx$ is equal to

(A) $\cot^{-1}(\tan^2 x) + c$ (B) $\tan^{-1}(\tan^2 x) + c$

(C) $\cot^{-1}(\cot^2 x) + c$ (D) $\tan^{-1}(\cot^2 x) + c$

Q.74 If $\int \sqrt{1 + \sin x} f(x) dx = \frac{2}{3}(1 + \sin x)^{3/2} + c$, then f(x) equals

(A) $\cos x$ (B) $\sin x$

(C) $\tan x$ (D)1

Q.75 The value of $\int \frac{\log(\tan x)}{\sin x \cdot \cos x} dx$ equals

(A) $\frac{1}{2} \log(\tan x) + c$ (B) $\frac{1}{2} \log(\tan^2 x) + c$

(C) $\frac{1}{2}(\log(\tan x))^2 + c$ (D) $\cos 2x + c$

Q.76 The value of $\int \sin^4 x dx$ equals

(A) $\frac{3}{8}x + \frac{\sin 4x}{32} + \frac{\sin 2x}{4} + c$ (B) $\frac{3}{8}x - \frac{\sin 4x}{32} - \frac{\sin 2x}{4} + c$

(C) $\frac{-3}{8}x + \frac{\sin 4x}{32} - \frac{\sin 2x}{4} + c$ (D) $\frac{3}{8}x + \frac{\sin 4x}{32} - \frac{\sin 2x}{4} + c$

Q.77 The value of $\int \sin^3 x \cdot \cos^5 x dx$ equals

(A) $\frac{\sin^4 x}{4} - \frac{2\sin^6 x}{6} + \frac{\sin^8 x}{8} + c$ (B) $\frac{\sin^4 x}{4} + \frac{2\sin^6 x}{6} + \frac{\sin^8 x}{8} + c$

(C) $\frac{\sin^4 x}{4} + \frac{2\sin^6 x}{6} - \frac{\sin^8 x}{8} + c$ (D) $\frac{\sin^8 x}{8} + c$

Q.78 The value of $\int (\sin x)^{-11/3} \cdot (\cos x)^{-1/3} dx$ equals

(A) $\frac{3}{2}(\cot^{2/3} x) + \frac{3}{8}(\cot^{8/3} x) + c$ (B) $-\left\{\frac{3}{2}\left(\cot^{\frac{2}{3}} x\right) + \frac{3}{8}\left(\cot^{\frac{8}{3}} x\right)\right\} + c$

(C) $\frac{2}{3}(\cot^{2/3} x) + \frac{8}{3}(\cot^{8/3} x) + c$ (D) $-\left\{\frac{2}{3}\left(\cot^{\frac{2}{3}} x\right) + \frac{3}{8}\left(\cot^{\frac{8}{3}} x\right)\right\} + c$

Q.79 $\int \frac{dx}{\sec^2 x \tan^2 x} =$

(A) $\frac{3}{2}x + \tan x + \frac{\cos 2x}{4} + c$ (B) $\frac{3}{2}x + \tan x + \frac{\sin 2x}{4} + c$

(C) $-(\frac{3}{2}x + \cot x + \frac{\sin 2x}{4}) + c$ (D) $\frac{2}{3}x - \tan x - \frac{\cos 2x}{4} + c$

Q.80 If $\int \frac{\cos x}{\sin^{2/3} x+\sin^{3/4}} dx = P\sin^{1/4} x + Q\sin^{1/6} x + R\sin^{1/12} x - 12\log(1 + \sin^{1/12} x) + c$ then the value of P + Q + R

(A) 10 (B) 12

(C) 6 (D) 8

Q.81 If $\int \frac{(x+\sqrt{1+x^2})^{15}}{\sqrt{1+x^2}} dx = \frac{(x+\sqrt{1+x^2})^n}{n} + c$, then the value of n is

(A) 14 (B) 15

(C) 16 (D) 17

Q.82 If $I_n = \int \frac{t^n}{1+t^2} dt$ then

(A) $I_{n+2} = \frac{t^n}{n} - nI_n$ (B) $I_{n+1} = \frac{t^{n+1}}{n+1} + I_n$

(C) $I_{n+1} = \frac{t^{n-1}}{n-1} - I_n$ (D) $I_{n+2} = \frac{t^{n+1}}{n+1} - I_n$

Q.83 $\int \tan^5 \theta d\theta =$

(A) $\frac{1}{4}\tan^4 \theta - \frac{1}{2}\tan^2 \theta + \log|\sec\theta| + C$

(B) $\frac{1}{4}\tan^4 \theta + \frac{1}{2}\tan^2 \theta + \log|\sec\theta| + c$

(C) $\frac{1}{4}\tan^4 \theta - \frac{1}{2}\tan^2 \theta - \log|\sec\theta| + c$

(D) $\frac{1}{4}\tan^4 \theta + \frac{1}{2}\tan^2 \theta - \log|\sec\theta| + c$

Q.84 If $I_n = \int \frac{\sin nx}{\sin x} dx$, for $n > 1$, then the value of $I_n - I_{n-2}$ is

(A) $\frac{2}{n-1}\cos(n-1)x$ (B) $\frac{2}{n-1}\sin(n-1)x$

(C) $\frac{2}{n}\cos nx$ (D) $\frac{2}{n}\sin nx$

Q.85 $\int \left(\frac{\sec x}{\sec x - \tan x}\right) dx$ equals

(A) $\sec x - \tan x + c$ (B) $\log|\sec x + \tan x| + c$

(C) $\log|\sec x - \tan x| + c$ (D) $\sec x + \tan x + c$

Q.86 If $\int \sin 3x \cos 5x dx = 0$ when $x = 0$,

(A) $\frac{1}{16}$ (B) $-\frac{1}{16}$

(C) $\frac{3}{16}$ (D) $-\frac{3}{16}$

Q.87 $\int \frac{dx}{x(1+(\log x)^2)}$ equals

(A) $\log(\tan^{-1} x) + c$ (B) $\log(\tan^{-1} x) + \tan^{-1}(\log x) + c$

(C) $\tan^{-1}(\log(\tan^{-1} x)) + c$ (D) $\tan^{-1}(\log x) + c$

Q.88 If $\int \frac{e^x - 1}{e^x + 1} dx = f(x) + c$, then $f(x)$ may be equal to

(A) $2\log|e^x + 1|$ (B) $\log|e^{2x} - 1|$

(C) $2\log(e^x + 1) - x$ (D) $\log(e^{2x} + 1)$

Q.89 $\int \cos\sqrt{x} dx$ equals

(A) $2[\sqrt{x}\sin\sqrt{x} + \cos\sqrt{x}] + c$ (B) $2[\sqrt{x}\sin\sqrt{x} - \cos\sqrt{x}] + c$

(C) $2[\cos\sqrt{x} - \sqrt{x}\sin\sqrt{x}] + c$ (D) $-2[\sqrt{x}\sin\sqrt{x} + \cos\sqrt{x}] + c$

Q.90 $\int \frac{(x+x^3)^{1/3}}{x^4} dx$ is equal to

(A) $\frac{3}{8}(\frac{1}{x^2} - 1)^{4/3} + c$ (B) $-\frac{3}{8}\left[\left(1 + \frac{1}{x^2}\right)^{\frac{4}{3}}\right] + c$

(C) $\frac{1}{8}\left(1 + \frac{1}{x^2}\right)^{4/3} + c$ (D) $\frac{1}{8}\left(\frac{1}{x^2} - 1\right)^{4/3} + c$

Q.91 $\int \frac{\ln(6x^2)}{x} dx$ equals

(A) $\frac{1}{8}(\ln 6x^2)^3 + c$ (B) $\frac{1}{4}(\ln(6x^2))^2 + c$

(C) $\frac{1}{2}(\ln(6x^2)) + c$ (D) $\frac{1}{16}(\ln(6x^2)) + c$

Q.92 $\int \frac{x\sin x^2 e^{5\theta c x^2}}{\cos^2 x^2}dx =$

(A) $\frac{1}{2}e^{\sec x^2} + c$ (B) $\frac{1}{2}e^{\sin x^2} + c$

(C) $\frac{1}{2}\sin x^2 \cdot e^{\cos^2 x^2} + c$ (D) $\frac{1}{2}e^{\cos x^2} + c$

Q.93 $\int \frac{dx}{\cos x+\sin x}$ is equal to

(A) $\frac{1}{\sqrt{2}}\log\tan(\frac{x}{2}+\frac{\pi}{8}) + c$ (B) $\frac{1}{\sqrt{2}}\log[\text{cosec}(\frac{x}{2}+\frac{\pi}{8}) + \cot(\frac{x}{2}+\frac{\pi}{8})] + c$

(C) $-\frac{1}{\sqrt{2}}\log[\text{cosec}(\frac{x}{2}+\frac{\pi}{8}) - \cot(\frac{x}{2}+\frac{\pi}{8})] + c$ (D) $-\frac{1}{\sqrt{2}}\log[\text{cosec}(\frac{x}{2}-\frac{\pi}{8}) + \cot(\frac{x}{2}-\frac{\pi}{8})] + c$

Q.94 $\int \frac{x^2+1}{(x-1)^2(x+3)}dx$ equals

(A) $e^{x-1} + \frac{1}{4}\cdot\frac{1}{(x-1)} + \tan^{-1}(x+3) + \log x + c$ (B) $\frac{3}{8}\log|x-1| - \frac{1}{2}\frac{1}{(x-1)} + c$

(C) $\frac{3}{8}\log|x-1| - \frac{1}{2}\cdot\frac{1}{(x-1)} + \frac{5}{8}\log|x+3| + c$ (D) $\frac{1}{3}\tan^{-1}(x+1) + \log|x+3| + c$

Q.95 $\int f(x)dx = 2(f(x))^3 + c$, and $f(0) = 0$ then $f(x)$ is

(A) $\frac{x}{2}$ (B) $\sqrt{\frac{x}{3}}$

(C) $2\sqrt{\frac{x}{3}}$ (D) $\frac{x^2}{2}$

Q.96 $\int \sqrt{1 + 2\cot x(\cot x + \text{cosec } x)}dx$ equals

(A) $2\ln\cos\frac{x}{2} + c$ (B) $2\ln\sin\frac{x}{2} + c$

(C) $\frac{1}{2}\ln\cos\frac{x}{2} + c$ (D) $\frac{1}{2}\ln\sin\frac{x}{2} + c$

Q.97 $\int e^{3x}\sin 2xdx$ equals

(A) $\frac{e^{3x}}{13}(3\cos 2x + 2\sin 2x) + c$ (B) $\frac{e^{3x}}{13}(3\sin 2x - 2\cos 2x) + c$

(C) $\frac{e^{3x}}{13}(-3\sin 2x - 2\cos 2x) + c$ (D) $\frac{e^{3x}}{13}(3\sin 2x + 2\cos 2x) + c$

Q.98 $\int (1 - x^2)\log xdx$ equals

(A) $(x - \frac{x^3}{3})\log x - (x - \frac{x^3}{9}) + c$ (B) $(x - \frac{x^3}{3})\log x + (x - \frac{x^3}{9}) + c$

(C) $(x + \frac{x^3}{3})\log x + (x + \frac{x^3}{9}) + c$ (D) $x\log x + c$

Q.99 $\int \frac{\tan^{-1}x - \cot^{-1}x}{\tan^{-1}x + \cot^{-1}x}dx$ equals

(A) $\frac{4x}{\pi}\tan^{-1}x + \frac{2}{\pi}\ln(1 + x^2) - x + c$ (B) $\frac{4x}{\pi}\tan^{-1}x - \frac{2}{\pi}\ln(1 + x^2) + x + c$

(C) $\frac{4x}{\pi}\tan^{-1}x + \frac{2}{\pi}\ln(1 + x^2) + x + c$ (D) $\frac{4x}{\pi}\tan^{-1}x - \frac{2}{\pi}\ln(1 + x^2) - x + c$

Q.100 $\int \sec x^{\circ}dx$ equals to

(A) $\log|\sec x^{\circ} + \tan x^{\circ}| + c$ (B) $\frac{\pi}{180}\log|\tan(\frac{\pi}{4} + \frac{x}{2})| + c$

(C) $\frac{180}{\pi}\log|\tan(\frac{\pi}{4} + \frac{x}{3})| + c$ (D) $\frac{180}{\pi}\log|\tan(\frac{\pi}{4} + \frac{\pi x}{360})| + c$

Q.1 Evaluate $\int e^{3\log x}(x^4)dx$.

Q.2 Evaluate $\int \cos^4 x dx$.

Q.3 Evaluate $\int \frac{\tan x \cdot \sec^2 x}{1-\tan^2 x} dx$.

Q.4 Evaluate $\int \sin 7x \cdot \sin x dx$.

Q.5 Evaluate $\int \log(2 + x^2)dx$.

Q.6 Evaluate $\int \frac{2x+1}{\sqrt{x^2+4x+3}} dx$.

Q.7 Evaluate $\int \frac{dx}{50+2x^2}$.

Q.8 Evaluate $\int \frac{dx}{\sqrt{x+3}-\sqrt{x+2}}$.

Q.9 Evaluate $\int x\sqrt{x^4-1}dx$.

Q.10 Evaluate $\int \frac{\sin 2x}{(1-\cos 2x)(2-\cos 2x)} dx$.

Q.11 Evaluate $\int \frac{2x-1}{(x-1)(x+2)(x-3)} dx$

Q.12 Evaluate following integral, $\int \frac{\sin^4 x}{\cos^8 x} dx$.

Q.13 Find the following integral $\int \frac{1}{3x^2+13x-10} dx$

Q.14 Integrate the following integral $\int \frac{1}{\sqrt{2ax-x^2}} dx$

Q.15 Illustrate above process by evaluate the integral, $\int \frac{4x+1}{\sqrt{x^2+3x+2}} dx$.

Q.16 Evaluate $\int \frac{x^2+1}{x^2-5x+6} dx$

Q.17 Evaluate $\int \frac{3x-2}{(x+1)^2(x+3)} dx$

Q.18 Evaluate $\int \frac{x}{(x^2+1)(x-1)} dx$

Q.19 Evaluate the integral, $\int \sqrt{x^2+2x+6} dx$.

Q.20 Integrate following w.r.t. x, $\sin^5 x \cos^4 x dx$.

Q.21 Evaluate the following integral $\int \frac{5\sin x+6}{2\cos x+\sin x+3} dx$

Q.22 Integrate the following integral $\int \frac{\cos^3 x+\cos^5 x}{\sin^2 x+\sin^4 x} dx$

Q.23 Evaluate the following integral: $\int (x+\sqrt{a^2+x^2})^{2007} dx$

Q.24 Evaluate $\int \sin^6 x dx$

Q.25 Evaluate $\int \cos x \log(\sin^2 x + 5\sin x + 6) dx$

Q.26 Evaluate $\int \cos x \cos 2x \cos 3x dx$

ANSWER KEY – LEVEL – I

Q.	1	2	3	4	5	6	7	8	9	10
Ans.	A	D	C	B	B	A	C	A	B	A
Q.	11	12	13	14	15	16	17	18	19	20
Ans.	B	A	C	C	B	B	D	C	A	B
Q.	21	22	23	24	25	26	27	28	29	30
Ans.	D	A	B	C	A	D	C	A	D	B
Q.	31	32	33	34	35	36	37	38	39	40
Ans.	D	A	A	B	A	B	A	C	C	B
Q.	41	42	43	44	45	46	47	48	49	50
Ans.	C	B	B	D	C	A	B	D	C	A
Q.	51	52	53	54	55	56	57	58	59	60
Ans.	B	B	C	D	A	B	A	B	A	C
Q.	61	62	63	64	65	66	67	68	69	70
Ans.	B	C	A	A	D	C	B	A	B	B
Q.	71	72	73	74	75	76	77	78	79	80
Ans.	B	A	B	A	C	D	A	B	C	A
Q.	81	82	83	84	85	86	87	88	89	90
Ans.	B	D	A	B	D	D	D	C	A	B
Q.	91	92	93	94	95	96	97	98	99	100
Ans.	B	A	A	C	B	B	B	A	D	D