Q.1 In $\int_a^b f(y)dy$, what is called as?

(A) Integration
(B) Upper limit
(C) Lower limit
(D) Limit of an integral

Q.2 The value of $\int_0^{\pi} \sin y dy$ is 2.

(A) True
(B) False

Q.3 Compute $\int \cos(x) - \frac{3}{x4} dx.$

(A) $\sec(x) + \frac{3}{4}x^{-7} + C$
(B) $\sec(x) + \frac{3}{4}x^{-3} + C$
(C) $\sin(x) + \frac{3}{4}x^{-3}$
(D) $\sin(x) + \frac{3}{4}x^{-3} + C$

Q.4 What is the value of $\int_2^3 \cos(x) - \frac{3}{x4} dx$.

(A) $\sin(3) - \sin(2)$
(B) $\sin(3) - \sin(9) - \frac{19}{288}$
(C) $\sin(8) - \sin(2) - \frac{19}{288}$
(D) $\sin(3) - \sin(2) - \frac{19}{288}$

Q.5 Evaluate $\int_7^9 \cos(x) dx.$

(A) $8(-\sin 9 - \sin 7)$
(B) $8(\sin 9 + \sin 7)$
(C) $8(\sin 9 - \sin 7)$
(D) $7(\sin 9 - \sin 7)$

Q.6 Compute $\int_2^3 \frac{\cos x - \sin x}{4} dx.$.

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

Q.7 What y is in $\int_a^b f(y)\,dy$ called as?

(A) Random variable
(B) Dummy symbol
(C) Integral
(D) Integrand

Q.8 The value of $\int_1^2 \text{ly}^5 dy$ is.

(A) 10.5 (B) 56 (C) 9 (D) 23

Q.9 The value of $\int_1^2 \text{ly}^5 / 5dy$ is.

(A) 12 (B) 2.1 (C) 21 (D) 11.1

Q.10 Evaluate $\int_0^x \sin x dx$.

(A) 2 (B) 6 (C) 17 (D) 3

Q.11 Evaluate $\int_2^3 \cos x dx$.

(A) 38.2
(B) sin (9) – sin (4)
(C) 89.21
(D) sin (3) – sin (2)

Q.12 Compute $\int_2^3 2e^x dx$.

(A) 2 ($e^9 - e^4$) (B) 84.32 (C) 2 ($e^3 - e^2$) (D) 83.25

Q.13 In $\int_b^a f(x)dx, b$ called as lower limit and a is called as upper limit.

(A) False (B) True

Q.14 Compute $\int_0^6 9e^x dx$.

(A) 30.82 (B) 9 ($e^6 - e^3$) (C) 11.23 (D) 81 ($e^6 - e^3$)

Q.15 Evaluate $\int_3^7 \sin(t) - 2\cos(t)dt$.

(A) cos (7)–2sin (7) + (cos (3) + 2sin (3)
(B) –17
(C) 12
(D) cos (7) – 2sin (7) – (cos (3) +2sin(3))

Q.16 Find $\int_0^8 x dx$.

(A) 32 (B) 34 (C) 21 (D) 24

Q.17 Find $\int_0^{\frac{\pi}{2}} 5\sin x dx$.

(A) –5 (B) 9 (C) 5 (D) –9

Q.18 Solve the value of $\int_4^5 \log x dx$.

(A) $5\log 5 - \log 4 + 1$
(B) $5\log 5 - 4\log 4 - 1$
(C) $4\log 5 - 4\log 4 - 1$
(D) $5 - 4\log 4 - \log 5$

Q.19 Determine $\int_0^{\frac{\pi}{4}} 9\cos^2 x dx$.

(A) $\frac{9}{2}\left(\frac{\pi}{6}-1\right)$ (B) $\frac{9}{4}\left(\frac{\pi}{6}+1\right)$ (C) $\frac{9}{4}\left(\frac{\pi}{2}-1\right)$ (D) $\left(\frac{\pi}{2}-1\right)$

Q.20 Determine $\int_0^2 e^{2x} dx$

(A) $\frac{e^4-1}{6}$ (B) $\frac{e^4+1}{2}$ (C) $\frac{e-1}{2}$ (D) $\frac{e^4-1}{2}$

Q.21 Evaluate $\int_{\frac{\pi}{4}}^{\frac{\pi}{2}} 2\sin x \sin(\cos x) dx$.

(A) $2\left(1-\cos\frac{1}{\sqrt{2}}\right)$ (B) $\left(\cos\frac{1}{\sqrt{2}}-\cos 1\right)$

(C) $2\left(\cos\frac{1}{\sqrt{2}}+1\right)$ (D) $\left(\cos\frac{1}{\sqrt{2}}+\cos 1\right)$

Q.22 Find $\int_{-2}^{1} 5x^4 dx$.

(A) 54 (B) 75 (C) 33 (D) 36

Q.23 Find $\int_0^3 e^x dx$.

(A) e^3+1 (B) $-e^3-1$ (C) e^3-1 (D) $3e^2-2$

Q.24 Find $\int_0^{\frac{\pi}{4}} 2\tan x dx$.

(A) log 2 (B) log $\sqrt{2}$ (C) 2 log 2 (D) 0

Q.25 Solve $\int_{-1}^{1} 2xe^x dx$.

(A) $\frac{4}{e}$ (B) $4e$ (C) $-\frac{4}{e}$ (D) $-4e$

Q.26 Evaluate the integral $\int_0^{\frac{x^2}{4}} \frac{9\sin\sqrt{x}}{2\sqrt{x}} dx$.

(A) 9 (B) –9 (C) $\frac{9}{2}$ (D) $-\frac{9}{2}$

Q.27 Find $\int_0^{-1} 20x^3 e^{x^4} dx$.

(A) $(e-1)$ (B) $5(e+1)$ (C) $5e$ (D) $5(e-1)$

Q.28 Solve $\int_{-1}^{1} \frac{5x^4}{\sqrt{x^5+3}}dx$.

(A) $4-\sqrt{2}$ (B) $4+2\sqrt{2}$ (C) $4-2\sqrt{2}$ (D) $1-2\sqrt{2}$

Q.29 Find $\int_{0}^{\frac{\sqrt{\pi}}{2}} 2x\cos x^2 dx$.

(A) 1 (B) $\frac{1}{\sqrt{2}}$ (C) $-\frac{1}{\sqrt{2}}$ (D) $\sqrt{2}$

Q.30 Evaluate the integral $\int_{1}^{6} \frac{\sqrt{x}+3}{\sqrt{x}}dx$.

(A) 9 (B) $\frac{9}{2}$ (C) $-\frac{9}{2}$ (D) $\frac{4}{5}$

Q.31 Solve $\int_{1}^{2} \frac{12\log x}{x}dx$.

(A) $-12\log 2$ (B) $24\log 2$ (C) $12\log 2$ (D) $24\log 4$

Q.32 Determine $\int_{0}^{\frac{\pi}{4}} \frac{5\sin(\tan^{-1}x)}{1+x^2}dx$.

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

Q.33 Find $\int_{-1}^{1} 7x^2(x^7+8)dx$.

(A) -386 (B) $-\frac{386}{3}$ (C) $\frac{386}{3}$ (D) 386

Q.34 Evaluate $\int_{\sqrt{2}}^{2} 14x\log x^2 dx$.

(A) $14(3\log 2-1)$ (B) $14(3\log 2+1)$ (C) $\log 2-1$ (D) $3\log 2-1$

Q.35 Solve $\int_{2}^{3} 2x^2 e^{x^3} dx$.

(A) $e^{27}-e^8$ (B) $\frac{2}{3}(e^{27}-e^8)$ (C) $\frac{2}{3}(e^8-e^{27})$ (D) $\frac{2}{3}(e^{27}+e^8)$

Q.36 What does the difference property of definite integrals state?

(A) $\int_{a}^{b}[-f(x)-g(x)dx$ (B) $\int_{a}^{b}[-f(-x)+g(x)dx$

(C) $\int_{a}^{b}[f(x)-g(x)dx$ (D) $\int_{a}^{b}[f(x)+g(x)dx$

Q.37 The sum property pertaining to definite integrals is $\int_a^b [f(x)+g(x)dx$?

(A) False (B) True

Q.38 What does the constant multiple property of definite integrals state?

(A) $\int_a^b k-f(x)\,dy$ (B) $\int_a^b [f(-x)+g(x)dx$

(C) $\int_a^b k-f(x)dx$ (D) $\int_a^b [f(x)+g(x)dx$

Q.39 What does the reverse integration property of definite integrals entail?

(A) $-\int_a^b f(x)dx = -\int_b^a g(x)dx$ (B) $-\int_a^b f(x)dx = \int_b^a g(x)dx$

(C) $\int_a^b f(x)dx = \int_b^a g(x)dx$ (D) $\int_a^b f(x)dx = -\int_b^a f(x)dx$

Q.40 Recognize the property of the zero-length interval.

(A) $\int_a^b f(x)dx = -1$ (B) $\int_a^b f(x)dx = 1$

(C) $\int_a^b f(x)dx = 0$ (D) $\int_a^b f(x)dx = 0.1$

Q.41 What does the property of adding intervals entail?

(A) $\int_a^c f(x)dx + \int_b^c f(x)dx = \int_a^c f(x)dx$ (B) $\int_a^b f(x)dx + \int_b^a f(x)dx = \int_a^c f(x)dx$

(C) $\int_a^b f(x)dx + \int_b^c f(x)dx = \int_a^c f(x)dx$ (D) $\int_a^b f(x)dx - \int_b^c f(x)dx = \int_a^c f(x)dx$

Q.42 What is the designation of the property $\int_a^b f(x)dx + \int_b^c f(x)dx = \int_a^c f(x)dx$?

(A) Zero interval property (B) Adding intervals property
(C) Adding integral property (D) Adding integrand property

Q.43 What is the designation of this property $\int_a^b f(x)dx = -\int_b^a f(x)dx$?

(A) Reverse integral property (B) Adding intervals property
(C) Zero interval property (D) Adding integrand property

Q.44 What is the title or designation of this property $\int_a^b f(x)dx = 0$?

(A) Reverse integral property (B) Adding intervals property
(C) Zero-length interval property (D) Adding integrand property

Q.45 Under which property does this equation fall $\int_{-1}^{1} \sin x dx = -\int_{1}^{-1} \sin x dx$?

(A) Reverse integral property (B) Adding intervals property
(C) Zero-length interval property (D) Adding integrand property

Q.46 Evaluate $\int_2^3 3f(x)-g(x)dx$, if $\int_2^3 f(x)=4$ and $\int_2^3 g(x)dx=4$.

(A) 38 (B) 12 (C) 8 (D) 7

Q.47 Compute $\int_3^2 f(x)dx$ if $\int_2^3 f(x)=4$.

(A) –4 (B) 84 (C) 2 (D) –8

Q.48 Compute $\int_8^2 2f(x)dx$ if $\int_2^8 f(x)=-3$

(A) –4 (B) 84 (C) 2 (D) –8

Q.49 Compute $\int_2^6 7e^x dx$.

(A) 30.82 (B) 7 ($e^6 - e^2$) (C) 11.23 (D) 81 ($e^6 - e^3$)

Q.50 Evaluate $\int_3^7 2f(x)-g(x)dx$, if $\int_3^7 f(x)=4$ and $\int_3^7 g(x)dx=2$.

(A) 38 (B) 12 (C) 6 (D) 7

Q.51 If $\int_{-1}^4 f(x)dx = 4$ and $\int_2^4 (3-f(x))dx = 7$, then the value of $\int_2^{-1} f(x)dx =$

(A) 2 (B)–2

(C)–3 (D)–5

Q.52 If $\int_0^\infty \frac{x^2dx}{(x^2+a^2)(x^2+b^2)(x^2+c^2)} = \frac{\pi}{2(a+b)(b+c)(c+a)}$, then the value of $\int_0^\infty \frac{dx}{(x^2+4)(x^2+9)}$ is

(A) $\frac{\pi}{60}$ (B) $\frac{\pi}{20}$

(C) $\frac{\pi}{40}$ (D) $\frac{\pi}{80}$

Q.53 The value of $\int_0^\infty \frac{xdx}{(1+x)(1+x^2)}$ is equal to

(A) $\frac{\pi}{4}$ (B) $\frac{\pi}{2}$

(C) π (D) $\frac{\pi}{8}$

Q.54 The value of the definite integral $\int_0^{\pi/2} \sqrt{\tan x}dx$ is

(A) $\sqrt{2}\pi$ (B) $\frac{\pi}{\sqrt{2}}$

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

Q.55 For $x \in R$ and a continuous function f,

let $l_1 = = \int_{\sin^2 t}^{1+\cos^2 t} xf\{x(2-x)\}dx$ and $I_2 = \int_{\sin^2 t}^{1+\cos^2 t} f\{x(2-x)\}dx$, then $\frac{I_1}{I_2}$

(A) –1 (B) 1

(C) 2 (D) 3

Q.56 The value of $\int_0^\infty \frac{\log x}{1+x^2}dx$, equals

(A) $\frac{\pi}{2}\log 2$ (B) $-\frac{\pi}{2}\log 2$

(C) 0 (D) $\frac{\pi}{4}\log 2$

Q.57 The value of $\int_{-1}^{10} sgn(x-[x])dx$, where [ ] is G.I.F., equals

(A) 0 (B) 11

(C) –11 (D) 12

Q.58 The value of $\int_{-\pi}^{\pi} \frac{\cos^2 x}{1+a^x}dx$, where $a > 0$, is

(A) π (B) $a\pi$ (C) $\frac{\pi}{2}$ (D) 2π

Q.59 The value of $\int_0^{\pi} e^{\sin^2 x} \cdot \cos(2n+1)x\,dx$, where $n \in N$, equals

(A) 0 (B) $2n+1$

(C) n (D) $n+1$

Q.60 The value of $\lim_{t\to\infty} \frac{\int_0^t (\tan^{-1} x)^2 dx}{\sqrt{t^2+1}}$ is

(A) $\frac{\pi}{4}$ (B) $\frac{\pi^2}{4}$

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

Q.61 If $I = \int_0^1 \frac{1}{\sqrt{2-x-x^2}} dx$, then which of the following is true?

(A) $\frac{\pi}{6} < I < \frac{\pi}{4}$ (B) $I < \frac{\pi}{4}$

(C) $I < \frac{\pi}{6}$ (D) $I > \frac{\pi}{4}$

Q.62 If $I_n = \int_0^{\pi/4} \sec^n x\,dx$, then $I_{10} - \frac{8}{9} I_8 =$

(A) $\frac{9}{16}$ (B) $\frac{25}{16}$

(C) $\frac{16}{9}$ (D) $\frac{4}{9}$

Q.63 The value of $\int_0^{\pi/2} \frac{dx}{1+\tan^3 x}$ is equal to

(A)0 (B) 1

(C) $\frac{\pi}{2}$ (D) $\frac{\pi}{4}$

Q.64 The value of $\int_2^3 \frac{\sqrt{x}}{\sqrt{5-x}+\sqrt{x}} dx$ is equal to

(A)1 (B) 0

(C) –1 (D) $\frac{1}{2}$

Q.65 The value of $\int_{-1}^{1} x^{17}\cos^4 x\,dx$ is equal to

(A)–2 (B) –1

(C)0 (D)2

Q.66 $\int_0^{\pi} (x \cdot \sin^2 x \cdot \cos x)\,dx$ is equal to

(A)0 (B) $\frac{2}{9}$

(C) $-\frac{2}{9}$ (D) $-\frac{4}{9}$

Q.67 The value of $\int_0^{1000} e^{x-[x]} dx$, where [ ] is G.I.F., is

(A) $\frac{e^{1000}-1}{1000}$ (B) $\frac{e^{1000}-1}{e-1}$

(C) $1000(e-1)$ (D) $\frac{e-1}{1000}$

Q.68 The value of $\int_2^{10} \{(x-1)(x-2)(x-3)\ldots\ldots\ldots(x-11)\}dx$ is

(A)45 (B) 55

(C)0 (D)110

Q.69 The value of $\int_{-\pi/2}^{\pi/2} \frac{dx}{e^{\sin x}+1}$ is equal to

(A)0 (B) 1

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

Q.70 The value of the integral $I = \int_0^1 x(1-x)^n dx$ is equal to

(A) $\frac{1}{n+1}$ (B) $\frac{1}{n+2}$

(C) $\frac{1}{n+1} - \frac{1}{n+2}$ (D) $\frac{1}{n+1} + \frac{1}{n+2}$

Q.71 The value of $\int_1^5 (|x-3| + |1-x|)dx$ is equal to

(A) 10 (B) $\frac{5}{6}$

(C) 21 (D) 12

Q.72 If [ ] and { } represents greatest integer function and fractional function then $\int_{-1}^{1} ([x] + \{x\} + |x|)dx$ equals

(A) 0 (B) 1

(C) –1 (D) $\frac{1}{2}$

Q.73 The value of $\int_0^{\pi/2} \frac{\cos 2x}{(\sin x + \cos x)^2} dx$ is equal to

(A) 0 (B) $\frac{\pi}{4}$

(C) $\frac{\pi}{2}$ (D) $\frac{\pi}{6}$

Q.74 The value of $\int_{-1/2}^{1/2} ([x] + \ln(\frac{1+x}{1-x}))\, dx$ is equals to (where [.] represents the greatest integer function)

(A) $-\frac{1}{2}$ (B) 0

(C) 1 (D) $2\log\left(\frac{1}{2}\right)$

Q.75 The value of $\int_0^{\pi/2} \frac{\cos x dx}{1+\cos x+\sin x}$ is equal to

(A) $\frac{\pi}{4} + \log 2$ (B) $\frac{\pi}{4} + \frac{1}{2}\log 2$

(C) $\pi - \frac{1}{2}\log 2$ (D) $\frac{\pi}{4} - \frac{1}{2}\log 2$

Q.76 $\int_{-2}^{0} \{x^3 + 3x^2 + 3x + 3 + (x+1)\cos(x+1)\}\, dx =$

(A) –4 (B) 0

(C) 4 (D) 6

Q.77 $\int_{19}^{37} (\{x\}^2 + 3\sin 2\pi x)\, dx$, where $\{x\}$ is fractional part of x, equals

(A) 0 (B) 6

(C) 9 (D) 7

Q.78 If $x^{f(x)} = e^{x-f(x)}$, then the value of integral $\int_1^2 f'(x)\{(1+\log x)^2\}dx + 1$ is

(A) 3log 3 (B) 2log 2

(C) log 2 (D) log 3

Q.79 Let $f(x) = \min\{|x+2|, |x|, |x-2|\}$, then the value of the integral $\int_{-2}^{2} f(x)dx$ is

(A) 4 sq. units (B) 10 sq. units

(C) 2 sq. units (D) 7 sq. units

Q.80 STATEMENT 1: $\int_0^{\frac{\pi}{2}} \frac{x\sin x\cos x}{\sin^4 x+\cos^4 x}dx = \frac{\pi^2}{32}$

And

STATEMENT-2 : $\int_0^a f(x)dx = \int_0^a f(a-x)dx$

(A) Statement-1 is True, Statement-2 is True; Statement-2 is a correct explanation for Statement-1

(B) Statement- 1 is True, Statement- 2 is True; Statement- 2 is NOT a correct explanation for Statement- 1

(C) Statement- 1 is True, Statement- 2 is False

(D) Statement- 1 is False, Statement- 2 is True

Q.81 STATEMENT-1: $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \sin(\log(x+\sqrt{1+x^2}))dx = 0$

And

STATEMENT-2 : $\int_{-a}^{a} f(x) = 0$ if f(x) is an even function

(A) Statement-1 is True, Statement-2 is True; Statement-2 is a correct explanation for Statement-1

(B) Statement- 1 is True, Statement- 2 is True; Statement- 2 is NOT a correct explanation for Statement- 1

(C) Statement- 1 is True, Statement- 2 is False

(D) Statement- 1 is False, Statement- 2 is true

Q.82 STATEMENT-1 : $\int_0^{\frac{\pi}{2}} \sin 2kx \cdot \cot x \cdot dx = \frac{\pi}{2}$; where $k \in \ell^+$

And

STATEMENT-2 : $\frac{\sin 2kx}{\sin x} = 2[\cos x + \cos 3x + \cdots \ldots + \cos(2k-1)x]$

(A) Statement-1 is True, Statement-2 is True; Statement-2 is a correct explanation for Statement-1

(B) Statement- 1 is True, Statement- 2 is True; Statement- 2 is NOT a correct explanation for Statement- 1

(C) Statement- 1 is True, Statement- 2 is False

(D) Statement- 1 is False, Statement- 2 is True

$|x| = [\begin{matrix} x & ; & x \geq 0 \\ -x & ; & x < 0 \end{matrix}$

and [.] represents greatest integer function less than or equal to x, then answer the Q.21 to 25.

Q.83 $\int_0^4 (|x-1|+|x-3|)dx$ equals

(A) 5 (B) 8

(C) 10 (D) 9

Q.84 $\int_{0.5}^{4.5} [x]dx + \int_{-1}^{1} |x|dx$ equal to

(A) 6 (B) 7

(C) 8 (D) 9

Q.85 $\int_0^{\frac{\pi}{3}} [\sqrt{3}\tan x]dx$ is equal to

(A) $\frac{\pi}{2} - \tan^{-1}\frac{2}{\sqrt{3}}$ (B) $\frac{5\pi}{6} - \tan^{-1}\frac{2}{\sqrt{3}}$

(C) $\frac{5\pi}{6}$ (D) $\frac{\pi}{6}$

Q.86 $\int_{-5}^{5} (|x| + |x+1|)dx$ is equal to

(A) 31 (B) 51

(C) 61 (D) 91

Q.87 $\int_{0}^{100} [\sqrt{x}]dx$

(A) 585 (B) 605

(C) 615 (D) 650

Q.88 The value of $\int_{0}^{a} \frac{dx}{x+\sqrt{(a^2-x^2)}}$ is equal to

(A) $\frac{\pi}{4}$ (B) $\frac{\pi}{2}$

(C) π (D) $\frac{\pi}{6}$

Q.89 The value of $\int_{0}^{\pi/2n} \frac{dx}{1+\tan^n(nx)}$ is equal to, $(n \in N)$

(A) 0 (B) $\frac{\pi}{4n}$

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

Q.90 $f: R \to R$, $g: R \to R$ are continuous functions.
The value of integral
$\int_{-\pi/2}^{\pi/2} [f(x) + f(-x)][g(x) - g(-x)]dx$ is equal to

(A) π (B) 1

(C) –1 (D) 0

Q.91 If $f(x) = \begin{cases} e^{\cos x} \sin x & \text{for } |x| \leq 2 \\ 2 & \text{otherwise} \end{cases}$ then the value of

(A) 0 (B) 1

(C) 2 (D) 3

Q.92 If $I_1 = \int_{0}^{n\pi} f(|\cos x|)dx$ and $I_2 = \int_{0}^{5\pi} f(|\cos x|)dx$, where $n \in N$ and $f(x)$ is a function such that $I_2 \neq 0$, then which of the following must be true.

(A) $\frac{I_1}{I_2} = \frac{5}{n}$ (B) $\frac{I_1}{I_2} = \frac{n}{5}$

(C) $I_1 + I_2 = n + 5$ (D) $I_1 - I_2 = n - 5$

Q.93 If $I_n = \int_{0}^{\pi/4} \tan^n x dx$ where $n \in N$, then $\frac{1}{I_2+I_4}, \frac{1}{I_3+I_5}, \frac{1}{I_4+I_6}, \ldots$ form

(A) An A.P. (B) A G.P.

(C) A H.P. (D) None of these

Q.94 The value of $\int_{2010\pi+\frac{\pi}{6}}^{2010\pi+\frac{\pi}{3}} (\sin x + \cos x)dx$ is

(A) $\sqrt{2} - 1$ (B) $\sqrt{3} - 1$

(C) $\sqrt{3} + 1$ (D) $\sqrt{2} + 1$

Q.95 Let $\int_{a}^{b} f(x)dx = \int_{a+c}^{b+c} f(x-c)dx$. Then the value of $\int_{0}^{\pi} \sin^{2010} x \cdot \cos^{2009} x dx$ is

(A) 2010 (B) 2009

(C)0 (D) 2011

Q.96 If $\int_0^x tf(t)dt = \sin x - x\cos x - \frac{x^2}{2}, \forall x \in R - \{0\}$. Then the value of $f\left(\frac{\pi}{6}\right)$ is

(A) 0 (B) 1

(C) $-\frac{1}{2}$ (D) 10

Q.97 The value of the integral $\int_{-201}^{2012\pi} \{\frac{d}{dx}\int_0^{x^2}(\cos t^2)\, dt\}\, dx$ is

(A) 2012π (B) 4024π

(C) 0 (D) -2012π

Q.98 If $\int \frac{dx}{x(x^2+1)^3} = \frac{1}{4(f(x))^2} + \frac{1}{2f(x)} + \frac{1}{2}\ln(\frac{x^2}{f(x)}) + c$ then $\lim_{x\to 0}(f(x))^{1/x}$ is

(A) 3 (B) $1 + \int_0^1 e^x \cdot dx$

(C) e^2 (D) $\int_0^{\pi/2} \sin x dx$

Q.99 $\int_{1/2}^{7/2} [\frac{1}{2}(|x-3| + |1-x| - 4)]\, dx$ equals

(A) $-\frac{3}{2}$ (B) $\frac{9}{8}$

(C) $\frac{1}{4}$ (D) $-\frac{11}{4}$

Q.100 Let a, b, c be non-zero real numbers such that $\int_0^1 (1+\cos^8 x)(ax^2+bx+c)dx = \int_0^2 (1+\cos^8 x)(ax^2+bx+c)dx$, then the equation $ax^2 + bx + c = 0$ Has

(A) No root in (0,2) (B) At least one root in (0,2)

(C) Two roots in (0,2) (D) none of these

Q.1 Find the value of $\int_{-1}^{1} x^3 \cdot e^{x^4} dx$.

Q.2 Find the value of $\int_{-1}^{1} x|x|dx$.

Q.3 Find the value of $\int_{-1}^{2} \frac{|x|}{x} dx$.

Q.4 Find the value of $\int_{3}^{6} 2[x]dx$, where [.] denotes greatest integer function.

Q.5 Find the value of $\int_{0}^{\pi/4} \sec^2 x dx$.

Q.6 Evaluate the value of $\int_{0}^{4} \frac{1}{\sqrt{x^2+2x+3}} dx$.

Q.7 Evaluate the value of $\int_{0}^{1} \frac{e^x}{1+e^{2x}} dx$.

Q.8 Evaluate the value of $\int_{-1}^{1} f(x)dx$, where $f(x) = \begin{cases} 1-2x, & x \leq 0 \\ 1+2x, & x > 0 \end{cases}$

Q.9 Evaluate the value of $\int_{0}^{\pi/2} \frac{\sqrt{\cos x}}{\sqrt{\cos x}+\sqrt{\sin x}} dx$.

Q.10 Evaluate the value of $\int_{0}^{1} \sin^{-1}(\frac{2x}{1+x^2})dx$.

Q.11 Evaluate the value of $\int_{0}^{\pi} \frac{x}{1+\sin x} dx$.

Q.12 Evaluate $\int_{0}^{\frac{\pi}{4}} \frac{\sin x+\cos x}{9+16s \quad 2x} dx$

Q.13 Evaluate $\int^{2\pi} |\cos x|dx$

Q.14 Evaluate $\int_{0}^{\pi/4} \frac{dx}{1+\cos 2x}$.

Q.15 Evaluate $\int_{1/3}^{1} \frac{(x-x^3)^{1/3}}{x^4} dx$

Q.16 Evaluate $\int_{0}^{\pi/4} \log(1+\tan x)dx$

Q.17 Evaluate $\int_{0}^{\pi} \frac{xdx}{1+\cos^2 x}$

Q.18 Evaluate $\int_{0}^{\pi/2} \ln \sin 2xdx$

Q.19 Evaluate $\int_{-\pi/4}^{\pi/4} x^3 \sin^2 xdx$

Q.20 Evaluate $\int_{-\pi/2}^{\pi/2} \sin^2 xdx$

Q.21 Evaluate $\int_{0}^{1} x^2 dx$ as the limit of a sum.

Q.22 Evaluate $\int_{0}^{\frac{\pi}{4}} \frac{\sin x+\cos x}{9+16s \quad 2x} dx$

Q.23 Evaluate $\int_{0}^{2\pi} |\cos x|dx$

Q.24 Evaluate $\int_{0}^{\pi} \frac{e^{\cos x}}{e^{\cos x}+e^{-\cos x}} dx$

Q.25 Evaluate $\int_{-\frac{\pi}{4}}^{\frac{\pi}{4}} \frac{x+\frac{\pi}{4}}{2-\cos 2x} dx$

ANSWER KEY – LEVEL – I

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