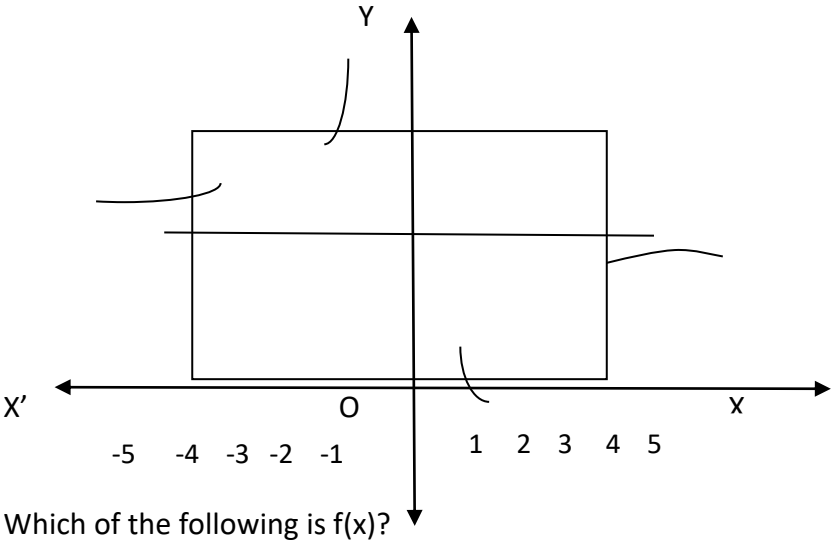
CHAPTER-2

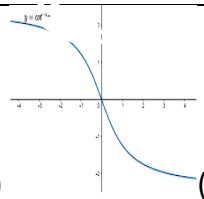
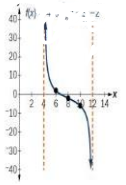
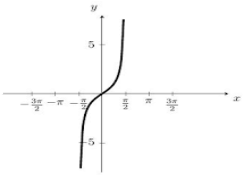
INVERSE TRIGONOMETRIC FUNCTION

CLASS-XII

01 MARK TYPE QUESTIONS

Q. NO	QUESTION	MARK
1	Shown below is the graph of function 'f' whose domain is R – (-1,1). Some portion of graph is hidden behind square.  Which of the following is f(x)? a) $\tan^{-1} x$ b) $\cot^{-1}x$ c) $\sec^{-1}x$ d) $\text{cosec}^{-1}x$	1
2	The domain of the function $y = \sin^{-1}(-x^2)$ is a)[0,1] b)(0,1) c)[-1,1] d)(-1,1)	1
3	If $x < 0$, $y < 0$ such that $xy = 1$, then $\tan^{-1} x + \tan^{-1} y$ equals a) $\pi/2$ b) $-\pi/2$ c) $-\pi$ d) None of these	1
4	The positive integral solution of the equation $\tan^{-1}x + \cos^{-1}\frac{y}{\sqrt{1+y^2}} = \sin^{-1}\frac{3}{\sqrt{10}}$ is a) x =1, y =2 b) x = 2, y =1 c) x = 3, y =2 d) x = -2, y = -1	1
5	If $\tan^{-1} x = \pi/10$ for some $x \in R$, then the value of $\cot^{-1} x$ is a) $\pi/5$ b) $2\pi/5$ c) $3\pi/5$ d) $4\pi/5$	1
6	The greatest and least values of $(\sin^{-1} x)^2 + (\cos^{-1} x)^2$ are respectively a) $\pi^2/8,\ 5\pi^2/4$ b) $\pi^2/4, 5\pi^2/8$ c) $5\pi^2/4, \pi^2/8$ d) $5\pi^2/8, \pi^2/4$	1

7	The value of $\sin(3\pi/2) - \sin(\sec^{-1}t + \text{cosec}^{-1}t)$, when $\lvert t\rvert \geq 1$ is a) 0 b) 1 c) -1 d) -2	1
8	The principal value of $\cos^{-1}(1/2) + \sin^{-1}(-1/\sqrt{2})$ is a) $\pi/12$ b) π c) $\pi/3$ d) $\pi/6$	1
9	$\tan^{-1}(\frac{x}{y}) - \tan^{-1}(\frac{x-y}{x+y})$=_____ a) $\frac{\pi}{2}$ b) $\frac{\pi}{3}$ c) $\frac{\pi}{4}$ d) $-3\frac{\pi}{4}$	1
10	Value of $\sin(\pi/3 - \sin^{-1}(-1/2))$ is a)1/2 b)1/3 c)1/4 d)1	1
11	For the following statement answer TRUE OR FALSE as appropriate: The value of $\cos^{-1}\cos\frac{5\pi}{4}$ is $\frac{5\pi}{4}$.	1
12	For the following statement answer TRUE OR FALSE as appropriate: $\cos^{-1}x$ is an increasing function in its domain (T/F)and is periodic in nature(T/F): (a)T,T (b)T,F (c)F,T (d)F,F	1
13	Fill in the blanks (3-5) If $\sin^{-1}\frac{1}{3} + \cos^{-1}x = \frac{\pi}{2}$ then the value of x is ----------	1
14	The range of $\tan^{-1}x$ is----------	1
15	The principal value branch of $\sec^{-1}x$ is----------	1
16	Multiple choice questions: Find the value of $\tan^{-1}\sqrt{3} - \cot^{-1}\sqrt{3}$ is; (a)$\frac{\pi}{3}$ (b) $\frac{\pi}{4}$ (c) $\frac{\pi}{6}$ (d) $\frac{3\pi}{2}$	1
17	The value of $\cos^{-1}\cos(1540^0)$ is; (a)1540^0 (b)1490^0 (c)100^0 (d)none of these	1
18	The domain of the function $f(x)=\sin^{-1}(2x-3)$ is: (a)$x\epsilon[1,2]$ (b)$x\epsilon(1,2)$ (c)$x\epsilon[-1,1]$ (d)none of these	1
19	Assertion(A):All trigonometric functions have their inverses over their respective domains. Reason(R): The inverse of $\tan^{-1}x$ exists for some $x \epsilon R$ (a)Both assertion and reason are correct and reason is the correct explanation of assertion. (b)both assertion and reason are correct but reason is not the correct explanation of assertion (c)assertion is correct but reason is incorrect (d)assertion is incorrect but reason is correct	1
20	The graph of $\cot^{-1}x$ is:	1

	(a)  (b)  (c)  (d)none	
21	**The domain of $\sin^{-1}(2x)$ is** (a) [0, 1] (b) [– 1, 1] (c) [-1/2, 1/2] (d) [–2, 2]	1
22	**The value of the expression sin [$\cot^{-1}$ (cos ($\tan^{-1}$ 1))] is** (a) 0 (b) 1 (c) 1/√3 (d) √(2/3)	1
23	**sin[π/3 – $\sin^{-1}$(-½)] is equal to:** (a) ½ (b) ⅓ (c) -1 (d) 1	1
24	**If $\cos^{-1}$ x + $\sin^{-1}$ x = π, then the value of x is** (a)1/ √2 (b) 1/√3 (c) 3/√2 (d) 2/√3	1
25	**If $\tan^{-1}$ (cot θ) = 2θ, then θ is equal to** (a) π/3 (b) π/4 (c) π/6 (d) None of these	1
26	**cot(π/4 – 2$\cot^{-1}$ 3) =**	1

	(a) 7 (b) 6 (c) 5 (d) None of these	
27	**The domain of $y = \cos^{-1}(x^2 - 4)$ is** (a) [3, 5] (b) [0, π] (c) [-√5, -√3] ∩ [-√5, √3] (d) [-√5, -√3] ∪ [√3, √5]	1
28	**The principal value of** **$\tan^{-1}(\tan 3\pi/5)$ is** (a) 2π/5 (b) -2π/5 (c) 3π/5 (d) -3π/5	1
29	**The domain of $\sin^{-1}(2x)$ is** (a) [0, 1] (b) [– 1, 1] (c) [-1/2, 1/2] (d) [–2, 2]	1
30	$2\tan^{-1}(\cos x) = \tan^{-1}(2\operatorname{cosec} x)$ (a) 0 (b) π/3 (c) π/4 (d) π/2	1
31	Domain of the function $\sin^{-1} x$ is (A) [0,1] (B) **R** (C) [-1,1]	1

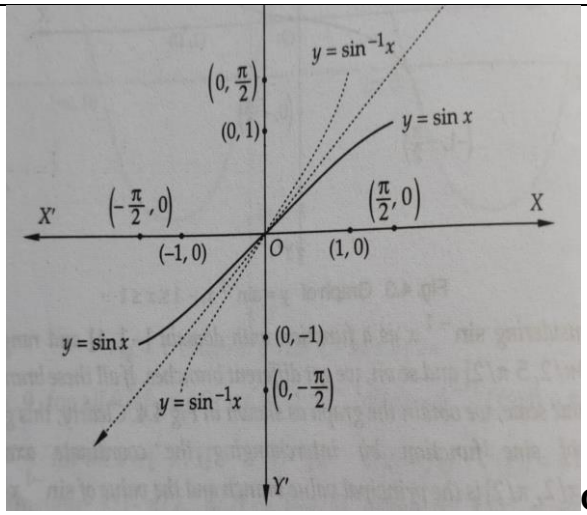
	(D) None of these	
32	If $\sin^{-1} x + \sin^{-1}(1-x) = 0$, then x is equal to: (A)0 (B) 1 (C) 2 (D) None of these	1
33	If $\sin^{-1} x - \cos^{-1} x = \frac{\pi}{6}$, then $x =$ (A)$\frac{1}{2}$ (B) $\frac{\sqrt{3}}{2}$ (C) $-\frac{1}{2}$ (D) $-\frac{\sqrt{3}}{2}$	1
34	If $\theta = \sin^{-1}\{\sin(-600°)\}$, then one of the possible value of θ is : (A)$\frac{\pi}{3}$ (B) $\frac{\pi}{2}$ (C) $\frac{2\pi}{3}$ (D) $\frac{-2\pi}{3}$	1
35	$\sin^{-1}(\cos y) = \frac{\pi}{2} - y$ is valid for (A)$-\pi \leq y \leq 0$ (B) $0 \leq y \leq \pi$ (C) $-\frac{\pi}{2} \leq y \leq \frac{\pi}{2}$ (D) None of these	1
36	The domain of $\sin^{-1}\left[\frac{2x}{1+x^2}\right]$= (A)(-2,1) (B) [-2,1] (C) (-2,0) (D) [-1,1]	1
37	$\sin^{-1}\left(\frac{4}{5}\right) + \sin^{-1}\left(\frac{5}{13}\right)$ is equal to (A)$\sin^{-1}\left(\frac{16}{65}\right)$ (B) $\cos^{-1}\left(\frac{16}{65}\right)$ (C) $-\sin^{-1}\left(\frac{16}{65}\right)$ (D) None of these	1
38	The value $\sin^{-1}\left(cos\left(\left(\frac{43\pi}{5}\right)\right)\right)$is (A)$\frac{3\pi}{5}$ (B) $\frac{-7\pi}{5}$ (C) $\frac{\pi}{10}$	1

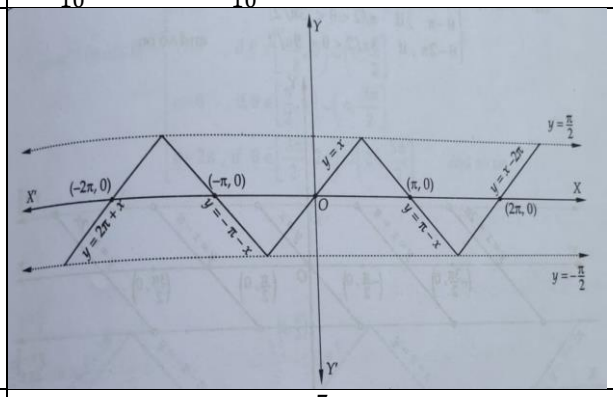
	(D) $\frac{-\pi}{10}$	
39	The principal value of $\cos^{-1}\left(\frac{1}{2}\right)+\sin^{-1}\left(-\frac{1}{\sqrt{2}}\right)$ is, (a)$\frac{\pi}{12}$ (b)$\frac{\pi}{6}$ (c)π (d)$\frac{\pi}{3}$	1
40	What is the domain of the function $\cos^{-1}(2x-3)$, (a)$[-1,1]$ (b)$(1,2)$ (c)$(-1,1)$ (d)$[1,2]$	1
41	Simplest form of $\tan^{-1}\left[\frac{\sqrt{1+x}-\sqrt{1-x}}{\sqrt{1+x}+\sqrt{1-x}}\right]$ is, (a)$\frac{\pi}{4}-\frac{\pi}{2}$ (b) $\frac{\pi}{4}+\frac{\pi}{2}$ (c) $\frac{\pi}{4}-\frac{1}{2}\cos^{-1}x$ (d) $\frac{\pi}{4}+\frac{1}{2}\cos^{-1}x$	1
42	The principal value of $\cos^{-1}\left(\cos\frac{13\pi}{6}\right)$ is, (a)$\frac{13\pi}{6}$ (b)$\frac{\pi}{2}$ (c) $\frac{\pi}{3}$ (d) $\frac{\pi}{6}$	1
43	The principal value of $\tan^{-1}\sqrt{3}-\cot^{-1}(-\sqrt{3})$ is, (a)π (b)$\frac{\pi}{2}$ (c)0 (d)$2\sqrt{3}$	1
44	If $\sin^{-1}\left(\frac{1}{5}\right)+\cos^{-1}(2x)=\frac{\pi}{2}$, then x is equals to, (a)$\frac{1}{5}$ (b)$\frac{2}{5}$ (c)$\frac{1}{10}$ (d)$\frac{5}{2}$	1
45	$\sin\left[\frac{\pi}{3}+\sin^{-1}\frac{1}{2}\right]$ is equals to, (a)1 (b)$\frac{1}{2}$ (c) $\frac{1}{3}$ (d) $\frac{1}{4}$	1
46	The value of $\sin\left(\sec^{-1}\left(\frac{17}{15}\right)\right)$ is, (a)$\frac{8}{17}$ (b)$\frac{15}{17}$ (c)$\frac{17}{8}$ (d)$\frac{8}{15}$	1
47	**Assertion (A)** : Maximum value of $(\cos^{-1}x)^2$ is π^2. **Reason (R) :** Range of the principal value branch of $\cos^{-1}x$ is $\left[-\frac{\pi}{2},\frac{\pi}{2}\right]$. (a)Both A and R are true and R is correct explanation of A. (b)Both A and R are true but R is not correct explanation of A. (c)A is true but R is false. (d)A is false but R is true.	1
48	**Assertion (A) :** the domain of the function $\sec^{-1}(2x)$ is $(-\infty,\frac{-1}{2}]\cup[\frac{1}{2},\infty)$ **Reason (R) :** $\sec^{-1}(-2)=-\frac{\pi}{4}$ (a)Both A and R are true and R is correct explanation of A. (b)Both A and R are true but R is not correct explanation of A. (c)A is true but R is false. (d)A is false but R is true.	1
49	**Assertion (A):** $\cos^{-1}x\geq\sin^{-1}x\ for\ all\ x\epsilon[-1,1]$ **Reason (R) :** $\cos^{-1}x$ is decreasing function in $[-1,1]$ (a)Both A and R are true and R is correct explanation of A. (b)Both A and R are true but R is not correct explanation of A. (c)A is true but R is false. (d)A is false but R is true.	1
50		1

	Assertion(A): $\sin^{-1}\frac{8}{17}+\sin^{-1}\frac{3}{5}=\sin^{-1}\frac{77}{85}$ **Reason (R) :** $\sin^{-1}x+\sin^{-1}y=\sin^{-1}\left(x\sqrt{1-y^2}+y\sqrt{1-x^2}\right)$ For $\leq x,y\leq x^2+y^2$ (a)Both A and R are true and R is correct explanation of A. (b)Both A and R are true but R is not correct explanation of A. (c)A is true but R is false. (d)A is false but R is true.	
51	The value of $\sin^{-1}\left(\cos\frac{\pi}{9}\right)$ is (a) $\frac{7\pi}{18}$ (b) $\frac{5\pi}{9}$ (c) $-\frac{5\pi}{9}$ (d) $\frac{\pi}{9}$	1
52	$\sin^{-1}(\sin\frac{2\pi}{3})+\cos^{-1}(\cos\frac{2\pi}{3})$ is equal to (a)$\frac{4\pi}{3}$ (b) $\frac{2\pi}{3}$ (c) π (d) $\frac{\pi}{2}$	1
53	The principal value of $\tan^{-1}\sqrt{3}-\sec^{-1}(-2)$ (a)$-\frac{\pi}{3}$ (b) $\frac{2\pi}{3}$ (c) π (d) $\frac{\pi}{2}$	1
54	The value of $\tan^{-1}(\tan\frac{5\pi}{6})+\cos^{-1}(\cos\frac{13\pi}{6})$ (a) $\frac{7\pi}{18}$ (b) $\frac{5\pi}{9}$ (c) $-\frac{5\pi}{9}$ (d) 0	1
55	The domain of the function defined by $f(x)=\sin^{-1}\sqrt{x-1}$is (a) [1,2] (b) [-1,1] (c) [0,1] (d) none of these	1
56	The domain of the function defined by $f(x)=\cos^{-1}(2x-1)$is (a) [1,2](b) [-1,1] (c) [0,1] (d) none of these	1
57	The value of $\cos^{-1}(2x^2-1)$, $0\leq x\leq 1$ is equal to (a) $2\cos^{-1}x$(b) $2\sin^{-1}x$(c)$\pi-2\cos^{-1}x$(d) $\pi+2\cos^{-1}x$	1
58	If $y=\cos^{-1}(cos10)$, then y is equal to (a)10 (b) $4\pi-10$ (c) $2\pi+10$ (d) $2\pi-10$	1
59	If $\cos^{-1}x>\sin^{-1}x$, then (a)$x<0$ (b) $-1<x<0$ (c) $0\leq x<\frac{1}{\sqrt{2}}$(d) $-1\leq x<\frac{1}{\sqrt{2}}$	1
60	In the following questions, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices. (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A.	1

	(c) A is true but R is false. (d) A is false but R is true. Assertion (A): The value of $\sin[\tan^{-1}(-\sqrt{3}) + \cos^{-1}(-\frac{\sqrt{3}}{2})]$ is 1 Reason (R):$\tan^{-1}(-x) = -\tan^{-1} x$ and $\cos^{-1}(-x) = \cos^{-1} x$.	
61	The Principal Value of $\cos^{-1}\left(\frac{-1}{2}\right)$ is (A) $\frac{\pi}{3}$ (B) $\frac{2\pi}{3}$ (C)$\frac{\pi}{6}$ (D)$\frac{5\pi}{6}$	1
62	The Principal value of $\tan^{-1}(-1)$ is (A) $\frac{\pi}{4}$(B) $\frac{\pi}{3}$ (C) $-\frac{\pi}{3}$ (D)$\frac{-\pi}{4}$	1
63	If $\tan^{-1}\frac{3}{4}$ = x then Sin x is (A) $\frac{1}{5}$ (B) $\frac{3}{5}$ (C)$\frac{4}{5}$ (D)$\frac{3}{7}$	1
64	If $\tan^{-1}x = \sin^{-1}\frac{1}{2}$ find the value of x is (A) $\sqrt{3}$ (B) 1 (C)$\frac{1}{\sqrt{3}}$(D) $n.d$	1
65	Evaluate $\sin[\frac{\pi}{6} - \text{Sin}^{-1}(\frac{-\sqrt{3}}{2})]$ (A) 1 (B)$\frac{1}{\sqrt{2}}$ (C)$\frac{-\sqrt{3}}{2}$(D)$\frac{\sqrt{3}}{2}$	1
66	. Evaluate $\text{Cos}[\frac{\pi}{2} - \text{Sin}^{-1}(\frac{1}{2})]$ A) 1 (B)$\frac{\sqrt{3}}{2}$ (C)$\frac{1}{2}$ (D) 0	1
67	The value of $\tan^{-1}1 + \text{Cos}^{-1}(\frac{-1}{2})$ (A) 11*/12* (B) $\frac{\pi}{12}$(C)$\frac{3\pi}{4}$(D)$\frac{5\pi}{6}$	1
68	The value of $\text{cosec}^{-1}(-1) + \text{Cot}^{-1}(\frac{-1}{\sqrt{3}})$ (A) $\frac{\pi}{6}$(B) $\frac{\pi}{3}$(C)$\frac{5\pi}{12}$(D)$\frac{\pi}{12}$	1
69	$\tan^{-1}\sqrt{3} - \sec^{-1}(-2)$ is equal to (A) π (B) $\frac{-\pi}{3}$ (C) $\frac{\pi}{3}$ (D) $\frac{2\pi}{3}$	1
70	The value of $\tan^{-1}(1) + \cos^{-1}\left(\frac{-1}{2}\right) + \sin^{-1}\left(\frac{-1}{2}\right)$ (A) π (B) $\frac{-\pi}{3}$ (C) $\frac{\pi}{3}$ (D) $\frac{3\pi}{4}$	1
71	If $\tan^{-1}x = y$, then (a) $-1 < y < 1$ (b) $\frac{-\pi}{2} \le y \le \frac{\pi}{2}$	1

	(c) $\frac{-\pi}{2}<y<\frac{\pi}{2}$ (d) $y \in \left\{\frac{-\pi}{2}, \frac{\pi}{2}\right\}$	
72	Assertion (A) All trigonometric functions have their inverses over their respective domains. Reason (R) The inverse of $\tan^{-1} x$ exists for some $x \in R$ (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1
73	The value of $\sin(\tan^{-1}x)$ where $\lvert x \rvert < 1$ (a) $\frac{x}{\sqrt{1-x^2}}$ (b) $\frac{1}{\sqrt{1-x^2}}$ (c) $\frac{1}{\sqrt{1+x^2}}$ (d) $\frac{x}{\sqrt{1+x^2}}$	1
74	$\left[\sin^{-1}\frac{\pi}{3}+\sin^{-1}\left(\frac{1}{2}\right)\right]$ is equal to (a) 1 (b) $\frac{1}{2}$ (c) $\frac{1}{3}$ (d) $\frac{1}{4}$	1
75	Simplest form of $\tan^{-1}\left(\frac{\sqrt{1+\cos x}+\sqrt{1-\cos x}}{\sqrt{1+\cos x}-\sqrt{1-\cos x}}\right)$, $\pi < x < \frac{3\pi}{2}$ (a) $\frac{\pi}{4} - \frac{x}{2}$ (b) $\frac{3\pi}{2} - \frac{x}{2}$ (c) $-\frac{x}{2}$ (d) $\pi - \frac{x}{2}$	1
76	Assertion (A) Range of $[\sin^{-1} x + 2\cos^{-1} x]$ is $[0, \pi]$. Reason (R) Principal value branch of $\sin^{-1} x$ has range $[-\frac{\pi}{2}, \frac{\pi}{2}]$ (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1
77	Assertion (A) The domain of the function $\sec^{-1} 2x$ is $(-\infty, -\frac{1}{2}] \cup [\frac{1}{2}, \infty)$ Reason (R) $\sec^{-1}(-2) = -\frac{\pi}{4}$ (a) Both A and R are true and R is the correct explanation of A.	1

	(b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	
78	The value of $\sin^{-1}[\sin(-\frac{17\pi}{8})]$ is (a) $\frac{17\pi}{8}$ (b) $\frac{\pi}{8}$ (c) $-\frac{\pi}{8}$ (d) $\frac{13\pi}{8}$	1
79	The value of $\sin(\cot^{-1} x)$ is (a) $\sqrt{1+x^2}$ (b) x (c) $(1+x^2)^{\frac{-3}{2}}$ (d) $(1+x^2)^{\frac{-1}{2}}$	1
80	If $\sin^{-1}x > \cos^{-1}x$, then x should lie in the interval (a) $\left(-1, \frac{-1}{\sqrt{2}}\right)$ (b) $\left(0, \frac{-1}{\sqrt{2}}\right)$ (c) $\left(\frac{1}{\sqrt{2}}, 1\right)$ (d) $\left(\frac{1}{\sqrt{2}}, 0\right)$	1
81	The principal value of $\cos^{-1}[\cos 680^0]$ is A. 30^0 B.40^0 C.50^0 D. 60^0	**1**
82	 **Graphs of y = sin x and y = sin $^{-1}$x as mirror images of each other in the line mirror of** **A. x + y = 0 B. x – y = 0** **C. -x + 2y = 0 D.None of these**	**1**

83	Domain of the function $\cos^{-1}(2x-1)$ is A. (0,1) B. [0,1) C. (0,1] D. [0,1]	**1**
84	The principal value of $\sin^{-1}(-\frac{1}{2})$ is A. $\frac{\pi}{3}$ B. $\frac{\pi}{4}$ C. $-\frac{\pi}{6}$ D. $\frac{\pi}{6}$	**1**
85	The value of $\sin^{-1}[\cos(\frac{33\pi}{5})]$ is A. $\frac{\pi}{5}$ B. $-\frac{\pi}{5}$ C. $\frac{\pi}{10}$ D. $-\frac{\pi}{10}$	**1**
86	 The given figure shows the graph of A. $y = \sin[\sin^{-1}(x)]$ B. $y = \sin[\cos^{-1}(x)]$ C. $y = \tan[\tan^{-1}(x)]$ D. $y = \cos[\cos^{-1}(x)]$	**1**
87	The value of $\cos^{-1}[\cos(\frac{7\pi}{6})]$ is A. $\frac{7\pi}{6}$ B. $\frac{\pi}{6}$ C. $\frac{5\pi}{6}$ D. $-\frac{7\pi}{6}$	**1**
88	**The minimum value of n for which** $\tan^{-1}(\frac{n}{\pi}) > \frac{\pi}{4}$, $n \in N$ is A. **2** B. **3** C. **4** D. **5**	**1**
89	**Domain of f (x) = $\sin^{-1}x + \cos x$** **A. [-1, 1]** **B. (-1, 1)** **C. R** **D. R - (-1, 1)**	**1**
90	**Write one branch of $\tan^{-1}x$ other than principal value branch.** **A. $[-\frac{3\pi}{2}, -\frac{\pi}{2}]$** **B. $(-\frac{3\pi}{2}, -\frac{\pi}{2}]$** **C. $(-\frac{3\pi}{2}, -\frac{\pi}{2})$** **D. $[-\frac{3\pi}{2}, -\frac{\pi}{2})$**	**1**

ANSWERS:

Q. NO	ANSWER	MARKS
1	c) $\sec^{-1}x$	1
2	c) [-1,1]	1
3	b) $-\pi/2$	1
4	a)x=1,y = 2	1
5	b)2 $\pi/5$	1
6	c)5 $\pi^2/4$, $\pi^2/8$	1
7	d)-2	1
8	a) $\pi/12$	1
9	c) $\pi/4$	1
10	d)1	1
11	Solution Ans:False Let $\cos^{-1}\cos\frac{5\pi}{4}$ =x $\cos x=\cos\frac{5\pi}{4}$ $\cos x=\cos(2\pi-\frac{5\pi}{4})$ $\cos x=cos\frac{3\pi}{4}$ $x=\frac{3\pi}{4}$	1
12	Solution: Ans: option c $\cos^{-1}x$ is a decreasing function in its domain and is periodic in nature	1
13	Solution: Given $\sin^{-1}\frac{1}{3}+\cos^{-1}x=\frac{\pi}{2}$ $\cos^{-1}x=\frac{\pi}{2}-\sin^{-1}\frac{1}{3}$ $x=\cos(\frac{\pi}{2}-\sin^{-1}\frac{1}{3})$ $x=\sin(\sin^{-1}\frac{1}{3})$ $x=\frac{1}{3}$ so the value of x is 1/3	1
14	Solution: The range of $\tan^{-1}x$ is $(\frac{-\pi}{2},\frac{\pi}{2})$	1
15	Solution: The principal value branch of $\sec^{-1}x$ is $[0,\pi]-\{\frac{\pi}{2}\}$	1
16	Solution: Ans:(a) Let $y=\tan^{-1}\sqrt{3}$ $\tan y=\sqrt{3}$ $\tan y=\tan\frac{\pi}{3}$ $y=\frac{\pi}{3}$ since the range of $\tan^{-1}x$ is $(\frac{-\pi}{2},\frac{\pi}{2})$ hence the principal value is $\frac{\pi}{3}$	1
17	Solution:	1

	Ans:(c) Given $\cos^{-1}(\cos1540°) = \cos^{-1}\{\cos(360*4+100°)\}$ $= \cos^{-1}\cos100°$ [Cos $(2\pi + \theta)$=cosΘ $= 100°$ [$\cos^{-1}\cos\Theta=\Theta,\Theta\epsilon[0,\pi]$ $\therefore \cos^{-1}(\cos1540°)=100°$	
18	Solution: Ans: (c) The domain of $\sin^{-1}x$ is[-1.1] Therefore $f(x)=\sin^{-1}(2x+3)$, for all x Satisfying;$-1\leq 2x-3\leq 1$ $-1+3 \leq 2x-3+3 \leq 1+3$ $2 \leq 2x \leq 4$ $1 \leq x \leq 2$ $x \in [1,2]$	1
19	Solution: Ans(d) Assertion: we know that all trigonometric functions have inverse over their restricted domains So, assertion is incorrect. Reason(R) $\tan^{-1}$:R $\rightarrow(\frac{-\pi}{2}, \frac{\pi}{2})$ i.e. the inverse of tan x exists for some $x\epsilon$ R so, reason is correct.	1
20	Answer: (a)	1
21	(c) [-1/2, 1/2]	1
22	(d) √(2/3)	1
23	(d) 1	1
24	(c) $3/\sqrt{2}$	1
25	(c) $\pi/6$	1
26	7	1
27	(d) [-√5, -√3] ∪ [√3, √5]	1
28	(b) -2π/5	1
29	(c) [-1/2, 1/2]	1
30	(c) π/4	1
31	(c)	1
32	(d)	1
33	(b)	1
34	(a)	1
35	(a)	1
36	(b)	1
37	(b)	1
38	(d)	1
39	(a)	1
40	(d)	1
41	(c)	1
42	(d)	1
43	(b)	1
44	(c)	1

45	(a)	1
46	(a)	1
47	(c)	1
48	(c)	1
49	(d)	1
50	(a)	1
51	(a) $\frac{7\pi}{18}$	1
52	(c) π	1
53	(a) $-\frac{\pi}{3}$	1
54	(d) 0	1
55	(a) [1,2]	1
56	(c) [0,1]	1
57	(a) $2\cos^{-1}x$	1
58	(b) $4\pi - 10$	1
59	(d) $-1 \leq x < \frac{1}{\sqrt{2}}$	1
60	(c) A is true but R is false	1
61	B	1
62	D	1
63	B	1
64	C	1
65	A	1
66	C	1
67	A	1
68	A	1
69	B	1
70	D	1
71	(c) $\frac{-\pi}{2}<y<\frac{\pi}{2}$	1
72	(d)	1
73	(d)	1
74	(a)	1
75	(a)	1
76	(d)	1
77	(c)	1
78	(c)	1
79	(d)	1
80	(c)	1
81	B	1
82	B	1
83	D	1
84	C	1

85	D	1
86	A	1
87	C	1
88	C	1
89	A	1
90	C	1