

Date : 02-11-2019
Time :
Marks : 300

TEST ID:
MAT, PHY, CHE

Single Correct Answer Type

1.	If $f(x) = \cos(\log x)$, then $f(x)f(y) - \frac{1}{2}[f(x/y) + f(xy)] =$
a)	-1
b)	$\frac{1}{2}$
c)	-2
d)	None of these
Ans.	d
Sol.:	
2.	The range of the function $f(x) = {}^{9-x}C_{x-3} + {}^{8-x}C_{x-2}$ is
a)	{ 3, 4, 5 }
b)	{ 2, 3, 4, 5, 6 }
c)	{ 5, 10, 15, 20 }
d)	{ 6, 17, 18 }
Ans.	d
Sol.:	
3.	If $f(x+ay, x-ay) = axy$, then $f(x, y)$ is equal to
a)	xy
b)	$x^2 - a^2 y^2$
c)	$\frac{x^2 - y^2}{4}$
d)	$\frac{x^2 - y^2}{a^2}$
Ans.	c
Sol.:	
4.	Let the function $f: R \rightarrow R$ be defined by $f(x) = 2x + \cos x$, $x \in R$. Then f is
a)	One-to-one and onto
b)	One-to-one but not onto
c)	Onto but not one-to-one
d)	Neither one-to-one nor onto
Ans.	a
Sol.:	
5.	If $f: [0, \infty) \rightarrow [0, \infty)$ and $f(x) = \frac{x}{1+x}$, then f is
a)	One-one and onto
b)	One-one but not onto
c)	Onto but not one-one
d)	Neither one-one nor onto

Ans. b	
Sol.:	
6.	If the function $f:[1, \infty) \rightarrow [1, \infty)$ is defined by $f(x)=2^{x(x-1)}$, then $f^{-1}(x)$ is
a)	$\left(\frac{1}{2}\right)^{x(x-1)}$
b)	$\frac{1}{2}(1+\sqrt{1+4\log_2 x})$
c)	$\frac{1}{2}(1-\sqrt{1+4\log_2 x})$
d)	Not defined
Ans. b	
Sol.:	
7.	The function f satisfies the functional equation $3f(x)+2f\left(\frac{x+59}{x-1}\right)=10x+30$ for all real $x \neq 1$. The value of $f(7)$ is
a)	8
b)	44
c)	4
d)	11
Ans. c	
Sol.:	
8.	If $f(x)=\frac{\alpha x}{x+1}, x \neq -1$. Then, for what value of α is $f(f(x))=x$
a)	$\sqrt{2}$
b)	$-\sqrt{2}$
c)	1
d)	-1
Ans. d	
Sol.:	
9.	Let $2\sin^2 x+3\sin x-2>0$ and $x^2-x-2<0$ (x is measured in radians). Then x lies in the interval
a)	$\left(\frac{\pi}{6}, \frac{5\pi}{6}\right)$
b)	$\left(-1, \frac{5\pi}{6}\right)$
c)	$(-1, 2)$
d)	$\left(\frac{\pi}{6}, 2\right)$
Ans. d	
Sol.:	