





<b>DPP</b> <b>Daily Practice</b> <b>Problem</b> <b>Physics</b>	<b>Topic : Mathematical Tools</b> <b>DPP No. 3</b>	<b>Time : 30 min.</b> <b>Total Marks : 50 Max.</b>
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Type of Questions  
Single choice Objective ('-1' negative marking) Q. 1 to Q. 7  
Multiple choice Objective ('-1' negative marking) Q. 8 & 9  
Subjective Questions ('-1' negative marking) Q. 10 & 11  
Match the following (no negative marking) Q. 12

- Q 1)  $\sin 210^\circ$  is equal to  
A)  $\frac{1}{2}$  B)  $-\frac{1}{2}$   
C)  $-\frac{\sqrt{3}}{2}$  D)  $\frac{\sqrt{3}}{2}$
- Q 2)  $\sin(90^\circ + \theta)$  is -  
A)  $\sin\theta$  B)  $\cos\theta$   
C)  $-\cos\theta$  D)  $-\sin\theta$
- Q 3)  $\sec(\pi + \theta)$   
A)  $\cos\theta$  B)  $\tan\theta$   
C)  $\sec\theta$  D)  $-\sec\theta$
- Q 4) If  $A = 60^\circ$  then value of  $\sin 2A$  will be  
A)  $\frac{\sqrt{3}}{2}$  B)  $\frac{1}{2}$   
C)  $\frac{1}{\sqrt{3}}$  D)  $\frac{1}{\sqrt{2}}$
- Q 5)  $\sin(750^\circ) =$   
A)  $\frac{1}{2}$  B)  $-\frac{1}{4}$   
C) 0 D)  $\frac{\sqrt{3}}{2}$
- Q 6) Value of  $\sin 225^\circ$  is :  
A)  $\frac{1}{\sqrt{2}}$  B)  $-\frac{1}{\sqrt{2}}$   
C) 1 D) -1
- Q 7)  $\cos\left(\frac{11\pi}{6}\right) =$   
A)  $\frac{1}{2}$  B)  $-\frac{\sqrt{3}}{2}$   
C) 0 D)  $\frac{\sqrt{3}}{2}$
- Q 8) If  $\theta = 120^\circ$ , then:  
A)  $\sin\theta = \frac{\sqrt{3}}{2}$  B)  $\cos\theta = \frac{1}{2}$   
C)  $\cot\theta = \frac{1}{2}$  D)  $\tan\theta = \sqrt{3}$
- Q 9) Which of the following have value equal to 1 ?  
A)  $\tan 225^\circ$  B)  $-\cos \pi$  C)  $\sin\left(\frac{5\pi}{4}\right)$  D)  $\tan(405^\circ)$
- Q 10) Find the values of  
A)  $\cos(-60^\circ)$  B)  $\tan(210^\circ)$  C)  $\cos(120^\circ)$  D)  $\sin(-1485^\circ)$
- Q 11) The following angle lie in which quadrant -  
(i)  $\frac{\pi}{3}$  (ii)  $\frac{5\pi}{3}$  (iii)  $\frac{2\pi}{7}$  (iv)  $\frac{5\pi}{6}$  (v)  $\frac{7\pi}{5}$
- Q 12) Match the following columns :  
a)  $\cos 307^\circ$  i)  $\frac{3}{5}$   
b)  $\cot 37^\circ$  ii)  $-\frac{3}{5}$   
c)  $\cos 127^\circ$  iii)  $\frac{4}{3}$   
d)  $\cos(-37^\circ)$  iv)  $-\frac{4}{3}$   
e)  $\tan 307^\circ$  v)  $\frac{4}{5}$

<b>DPP</b> <b>Daily Practice Problem</b> <b>Physics</b>	<b>Topic : Mathematical Tools</b> <b>DPP No. 4</b>	<b>Time : 30 min.</b> <b>Total Marks : 48 Max.</b>
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**Type of Questions**  
**Single choice Objective ('-1' negative marking) Q. 1 to Q. 11**  
**Subjective Questions ('-1' negative marking) Q. 12**

- Q 1) If  $f(x) = 3x + 4x^2 - 2$ , then value of  $f(-1)$  is  
 A) 1 B) -1  
 C) 2 D) 5
- Q 2) If  $f(x) = \sin^2 x - \cos^2 x$ , Then find  $f(\pi/12)$   
 A)  $\frac{\sqrt{3}}{2}$  B)  $-\frac{\sqrt{3}}{2}$   
 C)  $\frac{1}{2}$  D)  $-\frac{1}{2}$
- Q 3) If  $f(x) = \frac{x+1}{\frac{1}{x}-1}$ , Find the value of  $f(x) + f(-x)$  is  
 A)  $2(1+x^2)$  B)  $2\frac{(1-x^2)}{(1+x^2)}$   
 C)  $2\frac{(1+x^2)}{(1-x^2)}$  D)  $\frac{(1+x^2)}{(1-x^2)}$
- Q 4)  $f(x) = \tan x$  then the value  $f\left(\frac{\pi}{4}\right)$   
 A) 2 B) 3  
 C) 1 D) None of these
- Q 5) If  $g(x) = e^{2x} + e^x - 1$  and  $h(x) = 3x^2 - 1$ , the value of  $g(h(0))$  is :  
 A)  $\frac{1}{e^2} + e - 1$  B)  $\frac{1}{e^2} + \frac{1}{e} - 1$   
 C)  $e^2 + e - 1$  D)  $\frac{1}{e^2} + \frac{1}{e}$
- Q 6) If  $f(x) = \sin^3 x - \cos(2x)$ , then the value of  $f\left(\frac{\pi}{2}\right)$  is -  
 A) 2 B) 0  
 C) -2 D) 1
- Q 7) If  $f(x) = x^2$  and  $g(x) = \sin(2x)$ ; the value of  $g(f(\sqrt{y})) =$   
 A)  $\sin y$  B)  $\sin 2y$   
 C)  $\sin 2\sqrt{y}$  D)  $\sin^2(2y)$
- Q 8) If  $f(x) = \sin x + \cos x$ , then  $\frac{f(x)+f(-x)}{f(x)-f(-x)}$   
 A)  $\frac{\sin x + \cos x}{\sin x - \cos x}$  B)  $\cot x$  C)  $\tan x$  D)  $\frac{\sin x - \cos x}{\sin x + \cos x}$
- Q 9) If  $f(x) = x + 1$ ;  $g(z) = z^2$ ;  $h(y) = 3y$ , The value of  $f(h(g(a)))$  is :  
 A)  $(3a + 1)^2$  B)  $3a^2 + 1$  C)  $3(a^2 + 1)$  D)  $3a^2$
- Q 10) If  $f(x) = \frac{x^3-1}{x^2+1}$ , then the value of  $f((1))$  is  
 (i) 2 (ii) -2 (iii) 1 (iv) -1
- Q 11) If  $f(x) = 5x - 5$ ,  $g(x) = \sin^3 x + 2\cos^3 x$   
 The value of  $f(g(f(1)))$  is  
 A) 5 B) 0 C) 10 D) -5
- Q 12) If  $f(x) = \frac{x-1}{x+1}$ , Find the value of  
 A)  $f(1)$  B)  $f(0)$   
 C)  $f(f(1))$  D)  $f(2)$

<b>DPP</b> <b>Daily Practice</b> <b>Problem</b> <i>Physics</i>	<b>Topic : Mathematical Tools</b> <b>DPP No. 5</b>	<b>Time : 30 min.</b> <b>Total Marks : 56 Max.</b>
<b>Type of Questions</b> <b>Single choice Objective ('-1' negative marking) Q. 1 to Q. 11</b> <b>Subjective Questions ('-1' negative marking) Q. 12 to Q. 14</b>		

- Q 1) If  $f(x) = \frac{x}{(x^2+a^2)^{3/2}}$ , where a is a constant. The value of  $f\left(\frac{a}{\sqrt{2}}\right)$  is  
A)  $\frac{2^{3/2}}{3a^2}$  B)  $\frac{2a^2}{3\sqrt{3}}$   
C)  $\frac{2}{3\sqrt{3}a^2}$  D)  $\frac{3\sqrt{3}}{2}a^2$
- Q 2) If  $f(x) = \left(\frac{\sin x}{1-\cos^2 x}\right)(\operatorname{cosec} x + \cot x)(\operatorname{cosec} x - \cot x)$ , Then find  $f(\pi/2)$   
A) 1 B) -1  
C) -2 D) None of these
- Q 3) If  $f(x) = x^3$ ;  $g(y) = y - 1$ ;  $h(z) = z + 1$   
The value of  $f(g(h(x)))$  is :  
A)  $x^3 + 1$  B)  $x^3 - 1$   
C)  $x + 1$  D)  $x^3$
- Q 4) If  $f(x) = x^2 - 1$  and  $g(x) = \frac{1}{x} + 1$ ; the value of  $f\left(\frac{1}{g(x)}\right)$  is  
A)  $\frac{(x+1)^2}{2x+1}$  B)  $\frac{-2x-1}{(x+1)^2}$   
C)  $\frac{1+2x}{(x+1)^2}$  D)  $\frac{(x+1)^2}{1-2x}$
- Q 5) If  $y = x^3 + 2x^2 + 7x + 8$  then  $\frac{dy}{dx}$  will be –  
A)  $3x^2 + 2x + 15$  B)  $3x^2 + 4x + 7$   
C)  $x^3 + 2x^2 + 15$  D)  $x^3 + 4x + 7$
- Q 6) If  $y = \frac{1}{x^4}$  then,  $\frac{dy}{dx}$  will be  
A)  $\frac{4}{x^3}$  B)  $4x$   
C)  $-\frac{4}{x^5}$  D)  $\frac{4}{x^5}$
- Q 7) If  $y = x^2 \sin x$ , then  $\frac{dy}{dx}$  will be  
A)  $x^2 \cos x + 2x \sin x$  B)  $2x \sin x$   
C)  $x^2 \cos x$  D)  $2x \cos x$
- Q 8) If  $y = e^x \cdot \cot x$  then  $\frac{dy}{dx}$  will be  
A)  $e^x \cdot \cot x - \operatorname{cosec}^2 x$  B)  $e^x \cdot \operatorname{cosec}^2 x$   
C)  $e^x [\cot x - \operatorname{cosec}^2 x]$  D)  $e^x \cot x$
- Q 9) If  $y = x \ln x$  then  $\frac{dy}{dx}$  will be  
A)  $\ln x + x$  B)  $1 + \ln x$  C)  $\ln x$  D) 1
- Q 10)  $f(x) = \sin^2 x - \cos^2 x$ , then the value of  $f'\left(\frac{\pi}{4}\right)$  is  
(i) 2 (ii) 0 (iii) 1 (iv) none of these
- Q 11) If  $y = \tan x \cos^2 x$ , then  $\frac{dy}{dx}$  will be –  
A)  $1 + 2\sin^2 x$  B)  $1 - 2\sin^2 x$  C) 1 D)  $2\sin^2 x$
- Q 12)  $y = 4 + 5x + 7x^3$ . Find  $\frac{dy}{dx}$
- Q 13)  $y = x + x^2 + \frac{1}{x} + \frac{1}{x^3}$ . Find  $\frac{dy}{dx}$
- Q 14)  $y = x^2 + \frac{1}{x^2}$ . Find  $\frac{dy}{dx}$

<b>DPP</b> <b>Daily Practice</b> <b>Problem</b> <i>Physics</i>	<b>Topic : Mathematical Tools</b> <b>DPP No. 6</b>	<b>Time : 30 min.</b> <b>Total Marks : 56 Max.</b>
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**Type of Questions**

Single choice Objective ('-1' negative marking) Q. 1 to Q. 11

Subjective Questions ('-1' negative marking) Q. 12 to Q. 14

- Q 1) Double differentiation of displacement w. r. t. time is  
 A) *acceleration* B) *velocity*  
 C) *force* D) *none*
- Q 2) Find value of  $\sin^2 15^\circ + \sin^2 645^\circ$  :  
 A)  $\frac{1}{2}$  B)  $1$   
 C)  $\frac{1}{\sqrt{3}}$  D) *None of these*
- Q 3) Slope of graph  $y = \tan x$  drawn between  $y$  and  $x$ , at  $x = \frac{\pi}{4}$  is :  
 A)  $0$  B)  $1$   
 C)  $2$  D)  $\frac{1}{\sqrt{2}}$
- Q 4) The value of  $f'(x)$  at  $x = 1$  for the function  $f(x) = x \log_e x$  is  
 A)  $\log_e 2$  B)  $2$   
 C)  $1$  D)  $0$
- Q 5) If  $y = \sin x$ , then  $\frac{d^2y}{dx^2}$  will be :  
 A)  $\cos x$  B)  $\sin x$   
 C)  $-\sin x$  D)  $\sin x + C$
- Q 6) If  $y = x^3$  then  $\frac{d^2y}{dx^2}$  is -  
 A)  $6x^2$  B)  $6x$   
 C)  $3x^2$  D)  $3x$
- Q 7) If  $y = 2\sin^2\theta + \tan\theta$  then  $\frac{dy}{d\theta}$  will be -  
 A)  $4\sin\theta\cos\theta + \sec\theta\tan\theta$  B)  $2\sin 2\theta + \sec^2\theta$   
 C)  $4\sin\theta + \sec^2\theta$  D)  $2\cos^2\theta + \sec^2\theta$
- Q 8) Differentiation of  $\sin(x^2 + 3)$  w.r.t.  $x$   
 A)  $\cos(x^2 + 3)$  B)  $2x\cos(x^2 + 3)$   
 C)  $(x^2 + 3)\cos(x^2 + 3)$  D)  $2x\cos(2x + 3)$
- Q 9) If  $y = \sin(x) + \ln(x^2) + e^{2x}$  then  $\frac{dy}{dx}$  will be :  
 A)  $\cos x + \frac{2}{x} + e^{2x}$  B)  $\cos x + \frac{2}{x} + 2e^{2x}$  C)  $-\cos x + \frac{2}{x^2} + e^{2x}$  D)  $-\cos x - \frac{2}{x} + 2e^{2x}$
- Q 10) If  $f(x) = x^3 \ln(x)$  Then  $f'(x)$  is :  
 (i)  $x^2 + 3x^2 \ln(x)$  (ii)  $x^2(1 + \ln x)$  (iii)  $4x^2$  (iv) None of these
- Q 11) If  $y = e^{kt}$  then  $\frac{dy}{dx}$  will be  
 A)  $e^{kt}$  B)  $e^{kt}/k$  C)  $te^{kt}$  D)  $ke^{kt}$
- Q 12)  $y = \frac{1}{x+1}$ . Find  $\frac{dy}{dx}$
- Q 13) Differentiation of  $\sin(x^2)$  w.r.t  $x$  is -
- Q 14)  $y = (2x + 3)^4 - (7x - 1)^2 + \frac{2}{(3x-1)^3} + \frac{4}{(3x-2)^3}$ . Find  $\frac{dy}{dx}$









