



A.Y. DADABHAI TECHNICAL INSTITUTE

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MANAGED BY: THE SURATEE SUNNI VOHRA MUSLIM EDUCATION SOCIETY, SURAT

STUDY MATERIAL FOR DDCET EXAM

subject - Maths I



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CH – 1. Determinant & function

1. Value of $D = \begin{vmatrix} 2 & -2 \\ \frac{1}{2} & -\frac{1}{2} \end{vmatrix}$ is ____.
A. 1
B. -1
C. 0
D. 2
2. If $\begin{vmatrix} 3 & 2 \\ -3 & x \end{vmatrix} = 9$ then $x =$ ____
A. -1
B. 1
C. -5
D. 5
3. $\log 16 \div \log 2$ ____
A. 1
B. 8
C. 4
D. 2
4. $\log 3 \cdot \log 2 \cdot \log 1 =$ ____
A. 1
B. 3
C. 6
D. 0
5. $\text{Log}_4 \sqrt{3} 48 =$ ____
A. 1
B. 2
C. -1
D. -2
6. Which of the statement given below is correct?
A. $x^n = y$ then $\log_x y = n$
B. $x^n = y$ then $\log_y x = n$
C. $x^n = y$ then $\log_y n = x$
D. $x^n = y$ then $\log_n x = y$
7. $E^{\log_e x} =$ ____
A. x
B. e
C. 0
D. x^e
8. If $F(x) = x^2$ then $f(x+1) - f(x-1) =$ ____
A. x
B. 4x
C. 0
D. 2

9.	If $f(x) = \sin x + \cos x$ then $f\left(\frac{\pi}{4}\right) = \underline{\hspace{2cm}}$			
	A.	$\frac{1}{2}$	B.	2
	C.	$\frac{1}{\sqrt{2}}$	D.	$\sqrt{2}$

Ans:- D

10.	If $f(x) = \frac{x}{x+1}$ then $f(x) + f\left(\frac{1}{x}\right) = \underline{\hspace{2cm}}$			
	A.	1	B.	X+1
	C.	x	D.	None of the above

Ans:- A

11.	If $\begin{vmatrix} x & 1 \\ -1 & 2 \end{vmatrix} = \begin{vmatrix} 7 & 5 \\ 0 & 1 \end{vmatrix}$ then $x = \underline{\hspace{2cm}}$			
	A.	4	B.	-3
	C.	3	D.	-4

Ans:- C

12.	Value of $D = \begin{vmatrix} 0 & 1 & 0 \\ 2 & 3 & -2 \\ 2 & 4 & 1 \end{vmatrix}$ is $\underline{\hspace{2cm}}$.			
	A.	2	B.	-2
	C.	6	D.	-6

Ans:-D

13.	$\log_2(\log_3 y) = 1$ then $y = \underline{\hspace{2cm}}$			
	A.	6	B.	9
	C.	8	D.	5

Ans:- B

14.	If $ac=b$ then $\frac{1}{\log_a b} + \frac{1}{\log_c b} = \underline{\hspace{2cm}}$			
	A.	a	B.	b
	C.	c	D.	1

Ans:-D

15.	If $f(x) = 3x - 1$ and $f(x) = x^3 + 2$ then $f(2) - g(-1) = \underline{\hspace{2cm}}$			
	A.	3	B.	6
	C.	4	D.	2

Ans:- C

16.	If $f(x) = 2 - \log(\cos 2x)$ then $f(0) = \underline{\hspace{2cm}}$			
	A.	2	B.	1
	C.	x	D.	0

Ans:-A

17. $\begin{vmatrix} 1 & 1 \\ -1 & 1 \end{vmatrix} = \text{-----}$
 A. $\frac{-1}{2}$ B. $\frac{1}{2}$
 C. $\frac{1}{2}$ D. $\frac{-1}{2}$

Ans:-C

18. $\log_2 8 = \text{-----}$
 A. 1 B. 2 C. 3 D. 4

19. $5_{\log_5 25} = \text{-----}$
 A. 5 B. 25 C. 125 D. 625

20. $\log_6 3 + \log_6 2 = \text{-----}$
 A. 1 B. 2 C. 3 D. 6

21. If $\begin{vmatrix} x & 1 \\ 1 & x \end{vmatrix} = 0$ then $(\frac{d}{dx})x = \text{-----}$
 A. 0 B. $\frac{1}{x}$
 C. -1 D. ± 1

Ans:-D

22. If $\begin{vmatrix} a & b \\ -3 & 3 \end{vmatrix} = 9$ then $a + b = \text{-----}$
 A. -3 B. 3
 C. 6 D. -6

Ans:-B

23. If $f(x) = \log_{10} x$ then $f(100) = \text{-----}$
 A. 1 B. 2
 C. 10 D. 100

Ans:-B

24. $\log 1 \times \log 2 \times \log 3 = \text{-----}$
 A. 0 B. 1 C. 2 D. 3

25. If $f(x) = e^x$ then $f(x+y) = \text{-----}$
 A. $F(x+y)$ B. $F(x-y)$
 C. $F(x/y)$ D. $F(x).f(y)$

Ans:- D

26. If $f(x) = \frac{1}{x}$ then $f(\frac{1}{x}) = \text{-----}$
 A. $\frac{1}{x}$ B. $\frac{-1}{x}$
 C. $-x$ D. $\frac{1}{x}$

Ans:-D

27. $\log_4 5 \times \log_5 4 = \text{-----}$

- A. 1
C. 9

- B. 2
D. 20

Ans:-A

28. $\log_2 4 + \log_2 8 = \text{-----}$

- A. 2
C. 5

- B. 4
D. 32

Ans:-C

29. If $\log_2 X = 3$ then $x = \text{-----}$

- A. 2
C. 4

- B. 3
D. 8

Ans:- D

30. For which value of x, (X ની કઈ કિમત મળે) $\begin{vmatrix} 1 & 0 \\ 2 & x \end{vmatrix} = 2$?

- A. 0
C. 2

- B. 1
D. -2

Ans:-C

31. Value of $D = \begin{vmatrix} 1 & 4 & 7 \\ 0 & 0 & 0 \\ 2 & 3 & 5 \end{vmatrix}$ is ____ .

- A. 1
C. 0

- B. -1
D. 5

Ans:-C

32. If $\begin{vmatrix} 2 & 4 \\ -3 & x \end{vmatrix} = 10$ then $x = \text{_____}$

- A. -1
C. -11

- B. 1
D. 11

Ans:-D

33. If $f(x) = x^3 - 3$ then $f(2) = \text{_____}$

- A. 1
C. 3

- B. 9
D. 5

Ans:- D

34. If $f(x) = \frac{2x+3}{x}$ then $f(-3) + f(3) = \text{_____}$

- A. 4
C. 6

- B. 3
D. 1

Ans:-A

35. $\log_2\left(\frac{1}{8}\right) = \underline{\hspace{2cm}}$

- A. -3
C. -4

- B. 3
D. 4

Ans:-A

36. $\log_k t = h$ then

- A. $t^h = k$
C. $k^t = h$

- B. $k^h = t$
D. $h^t = k$

Ans:-B

37. $\log_4 1 = \underline{\hspace{2cm}}$

- A. 4
C. 0

- B. 1
D. -4

Ans:- C

38. $\sin 150^\circ = \underline{\hspace{2cm}}$

- A. $\frac{1}{2}$
C. 0

- B. $\frac{\sqrt{3}}{2}$
D. 1

Ans:-A

39. $\sqrt{2 + 2\cos 4x} = \underline{\hspace{2cm}}$

- A. $2\cos 2x$
C. $2\cos x$

- B. $\cos 2x$
D. $4\cos x$

Ans:-A

40. $\log_2 1 \times \log_3 2 \times \log_4 3 =$

- A. 4
C. $\frac{1}{4}$

- B. 0
D. 1

Ans:- B

42. $\log 25 \div \log 5 =$

- A. 0.2
C. 2

- B. 5
D. $\log 5$

Ans:- C

43. $\frac{1}{\log_4 12} + \frac{1}{\log_3 12} =$

- A. 12
C. 3

- B. 4
D. 1

Ans:-D

44. If $f(x) = \log_e x$ then $f(e^x) = \underline{\hspace{2cm}}$

- A. e
C. x

- B. 1
D. 0

Ans:-C

45. If $f(x) = 2 - \log(\cos 2x)$ then $f(0) = \underline{\hspace{2cm}}$

- A. 2
C. x

- B. 1
D. 0

Ans:- A

46. If $f(x) = \sin x + \cos x$ then $f\left(\frac{\pi}{4}\right) = \underline{\hspace{2cm}}$

- A. 2
C. $\frac{1}{\sqrt{2}}$

- B. $\sqrt{2}$
D. $\frac{1}{2}$

Ans:- B

47. If $\begin{vmatrix} x & 1 \\ -1 & x \end{vmatrix} = \begin{vmatrix} 3 & 4 \\ 0 & 1 \end{vmatrix}$ then $x = \underline{\hspace{2cm}}$

- A. 0
C. $\sqrt{2}$

- B. ± 2
D. ± 1

Ans:- C

48. If $h^2 + 5h = \begin{vmatrix} 2 & 4 \\ 2 & 1 \end{vmatrix}$ then $h = \underline{\hspace{2cm}}$

- A. -2 or -3
C. -2 or 3

- B. 2 or 3
D. 2 or -3

Ans:-A

49. Value of $D = \begin{vmatrix} 0 & 1 & 0 \\ 2 & 3 & -2 \\ 2 & 4 & 1 \end{vmatrix}$ is $\underline{\hspace{2cm}}$.

- A. 2
C. 6

- B. -2
D. -6

Ans:-D

CH – 2 Trigonometry

1.	$\frac{2\pi}{3}$ Radian = _____ Degree			
A.	210	B.	150	
C.	120	D.	270	

Ans:- C

2.	$\sin^2 55 + \sin^2 35 = \underline{\hspace{2cm}}$			
A.	0	B.	1	
C.	-1	D.	all	

Ans:-B

3.	Period of $\cos(2x-3) = \underline{\hspace{2cm}}$			
A.	π	B.	2π	
C.	3π	D.	0	

Ans:- A

4.	If $\alpha = \frac{\pi}{2}$ then $\sin(\alpha + \frac{\pi}{4}) = \underline{\hspace{2cm}}$.			
A.	1	B.	$\frac{\sqrt{3}}{2}$	
C.	$\frac{1}{\sqrt{2}}$	D.	$\frac{1}{2}$	

Ans:-C

5.	$\cos(p+q) = \underline{\hspace{2cm}}$			
A.	$\cos p \cos q + \sin p \sin q$	B.	$\sin p \cos q + \sin q \cos p$	
C.	$\cos p \cos q - \sin p \sin q$	D.	$\sin p \cos q - \sin q \cos p$	

Ans:-C

6.	$\sin(-\theta) = \underline{\hspace{2cm}}$			
A.	$\sin \theta$	B.	$-\sin \theta$	
C.	$\cos \theta$	D.	$-\cos \theta$	

Ans:-B

7.	$\sin(A+B) \cdot \sin(A-B) = \underline{\hspace{2cm}}$			
A.	$\sin^2 A + \sin^2 B$	B.	$\sin^2 A - \sin^2 B$	
C.	$\cos^2 A + \cos^2 B$	D.	$\cos^2 A - \cos^2 B$	

Ans:- B

8. $\cos^{-1}\left(\sin\frac{\pi}{3}\right)$

A.	$\pi/3$	B.	$\pi/4$
C.	$\pi/6$	D.	$\pi/2$

Ans:-C

9. If $A=30^\circ$ then $2\sin A \cdot \cos A = \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

A.	1	B.	$\sqrt{3}/2$
C.	$1/\sqrt{2}$	D.	$1/2$

Ans:-B

10. $\sin C + \sin D = \underline{\hspace{1cm}}$

A.	$2\sin\left(\frac{C+D}{2}\right) \cdot \cos\left(\frac{C-D}{2}\right)$	B.	$-2\sin\left(\frac{C+D}{2}\right) \cdot \cos\left(\frac{C-D}{2}\right)$
C.	$-2\cos\left(\frac{C+D}{2}\right) \cdot \cos\left(\frac{C-D}{2}\right)$	D.	$2\sin\left(\frac{C+D}{2}\right) \cdot \sin\left(\frac{C-D}{2}\right)$

Ans:- A

11. $\sin(\cos^{-1}1) = \underline{\hspace{1cm}}.$

A.	1	B.	$\pi/2$
C.	π	D.	0

Ans:- D

12. $\tan^{-1}\left(\frac{1}{2}\right) + \cot^{-1}\left(\frac{1}{2}\right) = \underline{\hspace{1cm}}.$

A.	$\pi/3$	B.	$\pi/4$
C.	$\pi/6$	D.	$\pi/2$

Ans:- D

13. $270^\circ = \underline{\hspace{1cm}}$

A.	$\left(2\pi/3\right)^R$	B.	$\left(\pi/3\right)^R$
C.	$\left(3\pi/2\right)^R$	D.	$\left(\pi/2\right)^R$

Ans:-C

14. $\tan(\pi - \theta) = \underline{\hspace{2cm}}$.

A.	$\tan \theta$	B.	$\cot \theta$
C.	$-\tan \theta$	D.	$-\cot \theta$

Ans:-C

15. $\sin 27^\circ \cos 18^\circ + \cos 27^\circ \sin 18^\circ = \text{-----}$.

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

Ans:-C

16. $\sin 2x = \text{-----}$

A.	$\frac{1 - \tan^2 x}{1 + \tan^2 x}$	B.	$\frac{1 + \tan^2 x}{1 - \tan^2 x}$
C.	$\frac{2 \tan x}{1 + \tan^2 x}$	D.	$\frac{2 \tan x}{1 - \tan^2 x}$

Ans:-C

17. If $(\text{જો}) \theta = \frac{7\pi}{4}$ (હોયતો) then θ (ક્યા ચરણ માં હોય?) lies in _____ quadrant.

A.	4	B.	3
C.	2	D.	1

Ans:-A

18. $\tan^{-1} \frac{1}{2} + \tan^{-1} \frac{1}{3} = \underline{\hspace{2cm}}$

A.	π	B.	$\frac{\pi}{2}$
C.	2π	D.	$\frac{\pi}{4}$

Ans:-D

19. If $\sin \theta = \frac{3}{5}$ then $\cos 2\theta = \underline{\hspace{2cm}}$

A.	$\frac{25}{16}$	B.	$\frac{16}{25}$
C.	$\frac{7}{25}$	D.	$\frac{25}{7}$

Ans:- C -

20. $\sin^2 21^\circ + \sin^2 69^\circ = \text{-----}$

A.	0	B.	1
C.	21	D.	69

Ans:- B

If $\sin \theta = \frac{3}{5}$ then $\sin 2\theta =$ _____

21. A. $\frac{25}{24}$  B. $\frac{24}{25}$
C. $\frac{7}{25}$ D. $\frac{25}{7}$

$\sin^{-1}(\sin \frac{\pi}{5}) =$ _____

22. A. $-\frac{\pi}{5}$  B. $\frac{\pi}{5}$
C. $\frac{3\pi}{5}$ D. $\frac{3\pi}{10}$

$\tan(22\frac{1}{2}^\circ) =$ _____

23. A. $\sqrt{1-\sqrt{2}}$  B. $\sqrt{\sqrt{2}-1}$
C. $\frac{\sqrt{2}}{1}$ D. $\frac{1}{\sqrt{2}}$

$\sin^2(37\frac{1}{2}^\circ) - \sin^2(7\frac{1}{2}^\circ) =$ _____

24. A. $\frac{1}{\sqrt{2}}$ B. -1
C. $\frac{1}{2\sqrt{2}}$  D. $\frac{-1}{2\sqrt{2}}$

$\sin 8\theta + \sin 6\theta =$ _____

25.  A. $2 \sin 7\theta \cdot \cos \theta$ B. $2 \cos 7\theta \sin \theta$
C. $2 \sin 8\theta \cdot \cos 6\theta$ D. $2 \cos 8\theta \sin 6\theta$
E. $2 \sin 6\theta \cdot \cos 8\theta$ F. $2 \cos 6\theta \sin 8\theta$

$\sin^{-1}(\frac{2x}{1+x^2}) =$ _____

26. A. $2\sin^{-1} x$  B. $2\tan^{-1} x$
C. $2\cos^{-1} x$ D. $4\sin^{-1} x$

the principal period of $3 \sin 2x$ is _____ (3 sin 2x નું મુખ્ય ચક્રાવલિનું -----)

27.  A. π B. $\frac{\pi}{2}$
C. 2π D. 0

$\tan^{-1} \frac{5}{7} + \tan^{-1} \frac{1}{6} =$ _____

28.  A. $\frac{\pi}{4}$ B. $\frac{\pi}{2}$
C. $-\frac{\pi}{4}$ D. $-\frac{\pi}{2}$

$\cot(\pi - \theta) =$ _____

29. A. $\tan \theta$ B. $\cot(\theta)$
C. $-\tan \theta$  D. $-\cot(\theta)$

$\sec \theta \cdot \cos \theta =$ _____

30. A. -1 B. 0
 C. 1 D. 2

31. $\cot^{-1}\left(\tan\frac{\pi}{4}\right) = \underline{\hspace{2cm}}$

- A. 1
C. $\frac{\pi}{4}$

- B. 0
D. None of above

Ans:-C

32. $\sin^{-1}\frac{3}{4} + \cos^{-1}\frac{3}{4} = \underline{\hspace{2cm}}$

- A. 1
C. $\frac{\pi}{4}$

- B. π
D. $\frac{\pi}{2}$

Ans:-D

33. $\frac{3\pi}{2}$ Radian = $\underline{\hspace{2cm}}$ Degree.

- A. 210
C. 240

- B. 180
D. 270

Ans:-D

34. $\sin^2 42 + \sin^2 48 = \underline{\hspace{2cm}}$

- A. 0
C. 1

- B. -1
D. all

Ans:-C

35. If $\alpha = \frac{\pi}{2}$ then $\cos(\alpha + \frac{\pi}{2}) = \underline{\hspace{2cm}}$.

- A. 1
C. π

- B. 0
D. -1

Ans:-D

36. $\sin(-\theta) = \underline{\hspace{2cm}}$. for all values of θ

- A. $\sin\theta$
C. $\cos\theta$

- B. $-\sin\theta$
D. $-\cos\theta$

Ans:-B

37. Fundamental period of $\tan x = \underline{\hspace{2cm}}$

- A. π
C. 3π

- B. 2π
D. 0

Ans:-A

38. $\cos(p+q)=$ _____

- A. $\text{Cosp cosq} + \text{sinp sinq}$
C. $\text{Cosp cosq} - \text{sinp sinq}$

- B. $\text{Sinp cosq} + \text{sinq cosp}$
D. $\text{Sinp cosq} - \text{sinq cosp}$

Ans:-C

39. $\sin^{-1}\left(\cos\frac{\pi}{3}\right) =$ _____ .

A. $\frac{\pi}{3}$

C. $\frac{\pi}{6}$

B. $\frac{\pi}{4}$

D. $\frac{\pi}{2}$

Ans:-C

40. $\tan^{-1}\left(\frac{1}{2}\right) + \tan^{-1}\left(\frac{1}{3}\right) =$ _____ .

A. $\frac{\pi}{3}$

C. $\frac{\pi}{6}$

B. $\frac{\pi}{4}$

D. $\frac{\pi}{2}$

Ans:-B

41. $120^{\circ} =$ _____

A. $\left(\frac{2\pi}{3}\right)^{\text{R}}$

C. $\left(\frac{3\pi}{2}\right)^{\text{R}}$

B. $\left(\frac{\pi}{3}\right)^{\text{R}}$

D. $\left(\frac{\pi}{2}\right)^{\text{R}}$

Ans:-A

42. $\sin(A+B) + \sin(A-B) =$ _____ .

A. $\text{Sin}^2\text{A} + \text{Sin}^2\text{B}$

C. $\text{cos}^2\text{A} + \text{cos}^2\text{B}$

B. $\text{Sin}^2\text{A} - \text{Sin}^2\text{B}$

D. $\text{cos}^2\text{A} - \text{cos}^2\text{B}$

Ans:- $2\sin\text{A CosB}$

CH:-3 vectors

1.	If $\vec{p} = \vec{i} + 3\vec{j} - 2\vec{k}$ then $ \vec{p} = \underline{\hspace{2cm}}$.			
A.	$\sqrt{14}$	B.	6	
C.	$\sqrt{12}$	D.	2	

Ans:-A

2.	$\vec{a} \cdot (\vec{a} \times \vec{b}) = \underline{\hspace{2cm}}$.			
A.	$\vec{a}$	B.	$\vec{a} \times \vec{b}$	
C.	0	D.	$\vec{b}$	

Ans:-C

3.	$(2\vec{i} - \vec{j} + 2\vec{k}) \cdot (5\vec{i} + 3\vec{j} - 4\vec{k})$			
A.	1	B.	-1	
C.	0	D.	2	

Ans:-B

4.	Unit vector in the direction of vector $2\vec{i} + 2\vec{j} - \vec{k}$ is $\underline{\hspace{2cm}}$.			
A.	$\frac{(2\vec{i} + 2\vec{j} - \vec{k})}{3}$	B.	$\frac{(2\vec{i} + 2\vec{j} - \vec{k})}{9}$	
C.	$\frac{(2\vec{i} + 2\vec{j} - \vec{k})}{4}$	D.	$\frac{(2\vec{i} + 2\vec{j} - \vec{k})}{5}$	

Ans:-A

5.	vectors $\vec{x}$ and $\vec{y}$ are perpendicular to each other then $\underline{\hspace{2cm}}$.			
A.	$\vec{x} \times \vec{y} = 1$	B.	$\vec{x} \times \vec{y} = 0$	
C.	$\vec{x} \cdot \vec{y} = 1$	D.	$\vec{x} \cdot \vec{y} = 0$	

Ans:-D

6.	If force $\vec{F} = 2\vec{i} + 3\vec{j} + 4\vec{k}$ and displacement $\vec{d} = \vec{i} - \vec{j} + 3\vec{k}$ then work done = $\underline{\hspace{2cm}}$.			
A.	8	B.	9	
C.	10	D.	11	

Ans:-D

7.	If $\vec{a} = \vec{i} - 2\vec{j} + \vec{k}$ and $\vec{b} = 3\vec{i} + 2\vec{j} - 5\vec{k}$ then $ \vec{a} + \vec{b} = \underline{\hspace{2cm}}$			
A.	$2\sqrt{2}$	B.	4	
C.	$4\sqrt{2}$	D.	$3\sqrt{2}$	

Ans:-C

8.	$\bar{k} \times \bar{i} = \underline{\hspace{2cm}}$.			
A.	$\bar{j}$	B.	$-\bar{j}$	
C.	$\bar{k}$	D.	$\bar{i}$	

Ans:-A

9.	$\bar{j} \cdot \bar{j} = \underline{\hspace{2cm}}$.			
A.	$\bar{j}$	B.	$-\bar{j}$	
C.	1	D.	-1	

Ans:-C

10.	If the angle between the vectors $\bar{x}$ and $\bar{y}$ is θ then $\cos\theta = \underline{\hspace{2cm}}$			
A.	$\frac{\bar{x} \cdot \bar{y}}{ \bar{x} \bar{y} }$	B.	$\frac{ \bar{x} \bar{y} }{\bar{x} \cdot \bar{y}}$	
C.	$\frac{\bar{x} \cdot \bar{y}}{ \bar{x} }$	D.	$\frac{\bar{x} \cdot \bar{y}}{ \bar{y} }$	

Ans:-B

11.	If $(2\bar{i} - 3\bar{j} + 5\bar{k}) \perp (m\bar{i} - 6\bar{j} - 8\bar{k})$ then $m = \underline{\hspace{2cm}}$.			
A.	10	B.	11	
C.	22	D.	12	

Ans:-B

12.	$ 2\bar{i} - 2\bar{j} + \bar{k} + 3\bar{j} + 4\bar{k} = \underline{\hspace{2cm}}$.			
A.	7	B.	8	
C.	9	D.	10	

Ans:-B

13. _____ is not a unit vector.

- | | | | |
|----|---------|----|---------|
| A. | (1,0,0) | B. | (0,1,0) |
| C. | (1,1,1) | D. | (0,0,1) |

Ans:-C

14.	If vector (જો સદૃશ) $\bar{x} = 3\bar{i} - \sqrt{3}\bar{j} + 2\bar{k}$ then (તે) $ \bar{x} = \underline{\hspace{2cm}}$			
A.	3	B.	4	
C.	5	D.	6	

Ans:-B

15. For unit vectors (એકમ સદૃશો માટે) $\bar{i}, \bar{j}, \bar{k}$ $\bar{i} \cdot (\bar{j} \times \bar{k}) = \underline{\hspace{2cm}}$

- | | | | |
|----|-----------|----|-----------|
| A. | $\bar{i}$ | B. | $\bar{j}$ |
| C. | $\bar{k}$ | D. | 1 |

Ans:-D

16. for two vectors , $\vec{x} \cdot (\vec{x} \times \vec{y}) =$ _____
 A. 0 B. 1
 C. $x^2 \times xy$ D. x^2y

Ans:-A

17. If $\vec{a}$ is a non – zero vector than $\frac{\vec{a}}{|\vec{a}|}$ is a _____
 A. scaler B. perpendicular vector
 C. parallel vector D. unit vector

Ans:-D

18. If Force $F=4k$ is acted on a body whose displacement vector is $j-k$, then the work done is _____
 A. 4 B. -4
 C. 5 D. -5

Ans:-B

19. If $\vec{x} = (1, 2, 3)$, $\vec{y} = (1, -2, 2)$ and $\vec{z} = (3, -2, -2)$ then $\vec{x} \cdot (\vec{y} \times \vec{z}) =$ _____
 A. 26 B. 36
 C. 46 D. 56

Ans:-B

20. The unit vector in the direction of vector $\vec{a}=3i-4k$ is = _____
 (સદિશ $\vec{a}=3i-4k$ ની એકમ સદિશ-----)
 A. $(\frac{-3}{5}, \frac{4}{5}, 0)$ B. $(\frac{-3}{5}, 0, \frac{4}{5})$
 C. $(\frac{3}{5}, 0, \frac{-4}{5})$ D. $(\frac{-3}{5}, \frac{-4}{5}, 0)$

Ans:-C

21. dot product of $(1, 2, -1) \cdot (1, 0, 1) =$ - - - -
 A. 0 B. 1
 C. 2 D. -2

Ans:-A

22. cross prouduct (સદિશ ગુણિત) of vectors $(1, 2, 3)$ and $(2, 4, 6)$ is - - -
 A. $(0, 0, 0)$ B. $(0, 0, 1)$
 C. $(0, 1, 0)$ D. $(1, 0, 0)$

Ans:-A

23. For non-zero vector $\vec{x}$, $\vec{x} \cdot \vec{x} =$ ----
 A. 0 B. $\vec{x}$
 C. $2|\vec{x}|$ D. $|\vec{x}|^2$

Ans:-D

24. $\vec{y} \cdot (\vec{x} \times \vec{y}) = \text{---}$

- A. -1
C. 1

- B. 0
D. None

Ans:-B

25. Which of the following is a scalar quantity?

- A. force
C. velocity

- B. acceleration
D. area

Ans:-D

26. If $\vec{p} = \vec{i} + 3\vec{j} - 2\vec{k}$ then $|\vec{p}| = \text{---}$.

- A. 2
C. $\sqrt{12}$

- B. 6
D. $\sqrt{14}$

Ans:-D

27. $(\vec{a} \times \vec{b}) \cdot \vec{a} = \text{---}$.

- A. $\vec{a}$
C. 0

- B. $\vec{a} \times \vec{b}$
D. $\vec{b}$

Ans:-C

28. $(\vec{i} + \vec{j} + 2\vec{k}) \cdot (5\vec{i} + 3\vec{j} - 4\vec{k})$

- A. 1
C. -1

- B. 0
D. 2

Ans:-B

29. Unit vector in the direction of vector $2\vec{i} + 2\vec{j} - \vec{k}$ is _____.

A. $\frac{(2\vec{i} + 2\vec{j} - \vec{k})}{3}$

B. $\frac{(2\vec{i} + 2\vec{j} - \vec{k})}{9}$

C. $\frac{(2\vec{i} + 2\vec{j} - \vec{k})}{4}$

D. $\frac{(2\vec{i} + 2\vec{j} - \vec{k})}{5}$

Ans:-A

30. Perpendicular vector to the vector $2\vec{i} - \vec{k}$ is = _____.

A. $2\vec{i} + \vec{j} + \vec{k}$

B. $\vec{i} + 2\vec{j} - \vec{k}$

C. $\vec{i} + 2\vec{j} + 2\vec{k}$

D. $2\vec{i} + \vec{j} - 2\vec{k}$

Ans:-C

31. If force $\vec{F} = \vec{i} + 3\vec{j} + 4\vec{k}$ and displacement $\vec{d} = 2\vec{i} - \vec{j} + 3\vec{k}$ the workdone= _____.

- A. 8
C. 10

- B. 9
D. 11

Ans:-D

32. If $\vec{a} = \vec{i} - \vec{j} - \vec{k}$ and $\vec{b} = 3\vec{i} + \vec{j} + 5\vec{k}$ then $|\vec{a} + \vec{b}| =$ _____
- A. $2\sqrt{2}$ B. $4\sqrt{2}$
C. $3\sqrt{2}$ D. $\sqrt{16}$

Ans:-B

33. $\vec{j} \cdot \vec{j} =$ _____ .
- A. $\vec{j}$ B. $-\vec{j}$
C. 1 D. -1

Ans:-A

34. $\vec{k} \times \vec{i} =$ _____ .
- A. $\vec{j}$ B. $-\vec{j}$
C. $\vec{k}$ D. $-\vec{i}$

Ans:-C

35. If the angle between the vectors $\vec{x}$ and $\vec{y}$ is θ then $\cos \theta =$ _____
- A. $\frac{\vec{x} \cdot \vec{y}}{|\vec{x}||\vec{y}|}$ B. $\frac{|\vec{x}||\vec{y}|}{\vec{x} \cdot \vec{y}}$
C. $\frac{\vec{x} \cdot \vec{y}}{|\vec{x}|}$ D. $\frac{\vec{x} \cdot \vec{y}}{|\vec{y}|}$

Ans:-A

36. If $(2\vec{i} - 3\vec{j} + 5\vec{k}) \perp (m\vec{i} - 6\vec{j} - 8\vec{k})$ then $m =$ _____ .
- A. 10 B. 22
C. 11 D. 12

Ans:-C

37. $|2\vec{i} - 2\vec{j} + \vec{k}| + |3\vec{j} + 4\vec{k}| =$ _____ .
- A. 7 B. 8
C. 9 D. 10

Ans:-B

38. $\vec{x} = (-1, 0, 0)$ $\vec{y} = (1, -2, 2)$ then $\vec{x} \times \vec{y} =$ _____ .
- A. $(0, 2, 2)$ B. $(0, -2, -2)$
C. $(0, -2, 2)$ D. $(0, 2, -2)$

Ans:-A

39. For the vectors $\bar{x}$ and $\bar{y}$ which option is correct ?

- A. $|\bar{x} + \bar{y}| = |\bar{x}| + |\bar{y}|$ B. $|\bar{x} + \bar{y}| \leq |\bar{x}| + |\bar{y}|$
 C. $|\bar{x} + \bar{y}| \geq |\bar{x}| + |\bar{y}|$ D. $|\bar{x} + \bar{y}| > |\bar{x}| + |\bar{y}|$

Ans:-B

40. Slope of line $3x-2y+5=0$ is _____

- A. $-\frac{3}{2}$ B. $\frac{3}{2}$
 C. $-\frac{2}{3}$ D. $\frac{2}{3}$

Ans:-B

41. If slope of l_1 is m_1 and slope of l_2 is m_2 also $l_1 \perp l_2$ then

- A. $m_1 = m_2$ B. $m_1 < m_2$
 C. $m_1 > m_2$ D. $m_1 m_2 = -1$

Ans:-D

42. Line $l_1: 4x+3y=1$ and l_1 is parallel to line l_2 then slope of l_2 is _____.

- A. $-\frac{3}{4}$ B. $\frac{3}{4}$
 C. $-\frac{4}{3}$ D. $\frac{4}{3}$

Ans:-C

43. Angle between lines $x+y=0$ and $x-y=0$ is _____.

- A. 0 B. 45°
 C. 30° D. 90°

Ans:-D

44. x-Intercept of line $2x-3y+4=0$ is _____.

- A. -2 B. 2
 C. -3 D. 3

Ans:-A

CH:- 4 Coordinate & Geometry

1.	For the vectors $\bar{x}$ and $\bar{y}$ which is always true ?			
A.	$ \bar{x} + \bar{y} = \bar{x} + \bar{y} $	B.	$ \bar{x} + \bar{y} \leq \bar{x} + \bar{y} $	
C.	$ \bar{x} + \bar{y} \geq \bar{x} + \bar{y} $	D.	$ \bar{x} + \bar{y} > \bar{x} + \bar{y} $	

Ans:-B

2.	Slope of line $2x+3y-4=0$ is _____			
A.	$-\frac{3}{2}$	B.	$\frac{3}{2}$	
C.	$-\frac{2}{3}$	D.	$\frac{2}{3}$	

Ans:-C

3.	If slope of l_1 is m_1 and slope of l_2 is m_2 also $l_1 \perp l_2$ then			
A.	$m_1 = m_2$	B.	$m_1 < m_2$	
C.	$m_1 > m_2$	D.	$m_1 m_2 = -1$	

Ans:-D

4.	Line $l_1: 4x-3y=1$ and l_1 is parallel to line l_2 then slope of l_2 is _____.			
A.	$-\frac{3}{4}$	B.	$\frac{4}{3}$	
C.	$-\frac{4}{3}$	D.	$\frac{3}{4}$	

Ans:-B

5.	Angle between lines $2x+y=0$ and $x-2y=0$ is _____.			
A.	0	B.	45°	
C.	30°	D.	90°	

Ans:-D

6.	x-Intercept of line $2x-3y+4=0$ is _____.			
A.	-3	B.	2	
C.	-2	D.	3	

Ans:-C

7.	Equation of line passing through the points (1,-3) and (-2,2) is _____			
A.	$5x+3y+4=0$	B.	$5x-3y+4=0$	
C.	$5x+3y-4=0$	D.	$5x-3y-4=0$	

Ans:-A

8.	x-Intercept of line is -3 then the line is passing through point is _____.			
A.	(-3,0)	B.	(3,0)	
C.	(0,-3)	D.	(0,3)	

Ans:-A

9.	Equation of circle having centre (0,0) and radius 5 is ____			
A.	$x^2 + y^2 = 5$	B.	$x^2 + y^2 = 25$	
C.	$x^2 + y^2 = -5$	D.	$x^2 + y^2 = -25$	

Ans:-B

10.	Centre of circle $x^2 + y^2 - 4x + 2y + 1 = 0$ is ____.			
A.	(2,1)	B.	(-2,-1)	
C.	(-2,1)	D.	(2,-1)	

Ans:-D

11.	Equation of line passing through the points (1,1) and having slope 2 is ____			
A.	$2x - y - 1 = 0$	B.	$x - 2y + 1 = 0$	
C.	$2x - y - 3 = 0$	D.	$x - 2y + 3 = 0$	

Ans:-A

12.	Equation of circle having centre (-3,-2) and radius 4 is ____			
A.	$x^2 + y^2 + 6x - 4y + 3 = 0$	B.	$x^2 + y^2 + 6x + 4y - 3 = 0$	
C.	$x^2 + y^2 - 6x - 4y + 3 = 0$	D.	$x^2 + y^2 - 6x - 4y - 3 = 0$	

Ans:-B

13.	Radius of circle $x^2 + y^2 = 7$ is ____.			
A.	49	B.	7	
C.	$\sqrt{7}$	D.	1	

Ans:- C

14.	Equation of normal for standard circle at (x_1, y_1) is ____.			
A.	$xy_1 = yx_1$	B.	$xx_1 = yy_1$	
C.	$x_1y_1 = y$	D.	$x_1y_1 = x$	

Ans:-A

15.	Radius of circle $x^2 + y^2 - 4x - 8y + k = 0$ is 4 then $k =$ ____			
A.	2	B.	4	
C.	-2	D.	-4	

Ans:-B

16.	If $ \vec{a} = 1$ then $4 \vec{a} =$ ____			
A.	1	B.	2	
C.	3	D.	4	

Ans:-D

17. Distance between two points (0,0) and (3,4) is -----
 A. 3 B. 4 **C. 5** D. 6
18. Slope of line passing through points A(5,7) and B(2,1) is _____
 A. $\frac{1}{2}$ **B. 2** C. 3 D. 4
19. Radius of circle (વર્તુળ ની ત્રિજ્યા) $x^2 + y^2 = 9$ is _____
 A. 1 B. 2
 C. 3 D. 4
- Ans:-C**
20. Equation of circle having centre (0,0) and radius 3 unit is _____
 A. $x^2 + y^2 = 0$ B. $x^2 + y^2 = 1$
 C. $x^2 + y^2 = 9$ D. $x^2 + y^2 = 25$
21. X-intercept of line $2x + 3y - 4 = 0$ is _____
 A. -2 B. **2** C. $\frac{4}{3}$ D. $\frac{1}{2}$
22. Slope of line parallel to the line $3x + 4y + 7 = 0$ is _____
 A. $\frac{4}{3}$ B. $-\frac{7}{4}$ C. $\frac{4}{7}$ **D. $-\frac{3}{4}$**
23. Centre of circle $x^2 + y^2 = 16$ is -----
A. (0,0) B. (1,1) C. (4,4) D. (4,0)
24. Slope of line making an angle $\frac{\pi}{3}$ with positive direction of X- axis is _____
 A. $\sqrt{3}$ B. $\frac{1}{\sqrt{3}}$
 C. 1 D. $\frac{1}{\sqrt{2}}$
- Ans:-A**
25. Slope of line perpendicular to the line $5x - 7y + 3 = 0$ _____
 A. $\frac{5}{7}$ **B. $-\frac{7}{5}$** C. $\frac{7}{5}$ D. $\frac{7}{4}$
26. If the slope of the line $kx - 5y = 7$ is 4 then find k= _____
 A. 12 **B. 20** C. -12 D. -20
27. equation of line passing through the origin and having slope $\frac{1}{2}$ is _____
 A. **$2y = x$** B. $x = 2y$ C. $2y = -x$ D. $x = -2y$
28. Y-intercept of line $3x - 5y + 8 = 0$ is _____
 A. $-\frac{8}{5}$ B. $\frac{5}{8}$ **C. $\frac{8}{5}$** D. $\frac{3}{5}$
29. For circle $x^2 + y^2 - 2x - 2y - 2 = 0$ radius is -----
 A. 1 B. 3 **C. 2** D. 4
30. For circle $x^2 + y^2 - 2x - 2y - 2 = 0$ centre -----
 A. (0,0) B. (1,-1) **C. (1,1)** D. (-1,-1)
31. Equation of line passing through the points (2,3) and (3,-1) is _____.
A. $4x + 2y = 11$ B. $4x - 2y = 11$
C. $4x - y = 11$ D. $4x + y = 11$

Ans:-C

AYDTI KOSAMBA.

CH :- 5 Limit

1.	$\lim_{x \rightarrow 0} (1-x)^{\frac{1}{x}} = \underline{\hspace{2cm}}.$			
A.	e	B.	1	
C.	$\frac{1}{e}$	D.	0	

Ans:-C

2.	$\lim_{x \rightarrow 2} \frac{x^2 - 5x + 6}{x - 3} = \underline{\hspace{2cm}}.$			
A.	1	B.	-1	
C.	2	D.	0	

Ans:-D

3.	$\lim_{x \rightarrow \infty} \frac{2x^2 + 3x + 2}{x^2 + 2x + 3} = \underline{\hspace{2cm}}.$			
A.	1	B.	0	
C.	2	D.	3	

Ans:-C

4.	$\lim_{n \rightarrow -1} \frac{2n+3}{3n+2} = \underline{\hspace{2cm}}.$			
A.	-1	B.	1	
C.	2	D.	0	

Ans:-A

5.	$\lim_{x \rightarrow 0} \frac{x}{\sin 5x} = \underline{\hspace{2cm}}.$			
A.	0	B.	$\frac{1}{5}$	
C.	1	D.	5	

Ans:-B

6.	$\lim_{x \rightarrow a} \frac{x^n - a^n}{x - a} = \underline{\hspace{2cm}}.$			
A.	na^{n-1}	B.	$(n-1)x^n$	
C.	na^{n+1}	D.	$(n-1)a^{n+1}$	

Ans:-A

7.	$\lim_{x \rightarrow \infty} \left(1 + \frac{2}{x}\right)^{5x} = \underline{\hspace{2cm}}.$			
A.	e^{25}	B.	e^2	
C.	e^5	D.	e^{10}	

Ans:-D

8. $\lim_{y \rightarrow 3} \left(\frac{3^y - 1}{y} \right) = \underline{\hspace{2cm}}.$

A.	$\log_e 3$	B.	1
C.	$\log_3 e$	D.	0

Ans:-A

9. $\lim_{x \rightarrow \infty} \frac{1}{x} = \underline{\hspace{2cm}}.$

A.	1	B.	0
C.	x	D.	e

Ans:-B

10. $\lim_{\theta \rightarrow 0} \left(\frac{\sin 4\theta}{\theta} + \frac{\tan \theta}{3\theta} \right) = \underline{\hspace{2cm}}.$

A.	$-\frac{13}{3}$	B.	$\frac{13}{3}$
C.	$-\frac{3}{13}$	D.	$\frac{3}{13}$

Ans:-B

11. $\lim_{\theta \rightarrow 0} \left(\frac{1 - \cos \theta}{\theta^2} \right) = \underline{\hspace{2cm}}.$

A.	0	B.	1
C.	$\frac{1}{2}$	D.	2

Ans:-C

12. $\lim_{h \rightarrow 0} \frac{a^h - 1}{h} = \underline{\hspace{2cm}}$

A.	1	B.	$\log_e h$
C.	h	D.	e

Ans:-LOG_ea

13. $\lim_{n \rightarrow \infty} \frac{2n+9}{n+7} = \underline{\hspace{2cm}}$

A.	$\frac{1}{2}$	→ B.	2
C.	1	D.	0

14. $\lim_{n \rightarrow \infty} \left(1 + \frac{1}{n} \right)^n = \underline{\hspace{2cm}}$

A.	0	B.	1
→ C.	e	D.	1/e

15. $\lim_{x \rightarrow 0} \frac{\sin 5x}{x} = \underline{\hspace{2cm}}.$

A.	1/5	B.	1
→ C.	5	D.	0

16. $\lim_{h \rightarrow 0} \frac{e^h - 1}{h} = \text{-----}$

A. 0

C. e

→ B.

1

D.

h

17. $\lim_{x \rightarrow 1} \frac{2x+1}{x+1} = \text{-----}$

A. -1

C. 1

B.

-3/2

→ D.

3/2

18. $\lim_{x \rightarrow 0} (1+x)^{\frac{1}{x}} = \text{-----}$

A. 0

C. e

B.

1

D.

1/e

Ans:-C

19. $\lim_{x \rightarrow 0} \frac{\tan 3x}{x} = \text{-----}$

A. 0

→ C. 3

B.

1

D.

1/3

20. $\lim_{x \rightarrow 0} \frac{2x}{\sin x} = \text{-----}$

A. 1

C. 1/2

→ B.

2

D.

4

21. $\lim_{x \rightarrow 2} \frac{x^5 - 32}{x^3 - 8} = \text{-----}$

A. 32/8

C. 23/8

→ B.

20/3

D.

-20/3

22. $\lim_{x \rightarrow 0} \frac{\sqrt{9+x} - 3}{x} = \text{-----}$

A. 0

C. 1/3

B.

1

→ D.

1/6

23. $\lim_{x \rightarrow 1} \frac{x^3 - x^2 + x - 1}{x^2 - 1} = \text{-----}$

A. -1

→ C. 1

B.

0

D.

2

24. $\lim_{x \rightarrow 0} \left(1 + \frac{x}{3}\right)^{\frac{3}{x}} = \text{-----}$

→ A.

e

B.

1

C. 2

D.

3

25. $\lim_{n \rightarrow -1} \frac{2n+3}{3n+2} = \underline{\hspace{2cm}}.$

A. 0

B. 1

C. 2

D. -1

Ans:-D

26. $\lim_{x \rightarrow 0} \frac{x}{\tan 5x} = \underline{\hspace{2cm}}.$

A. 0

B. $\frac{1}{5}$

C. 1

D. 5

Ans:-B

27. $\lim_{x \rightarrow 0} (1-x)^{\frac{1}{x}} = \underline{\hspace{2cm}}.$

A. e

B. 1

C. $\frac{1}{e}$

D. 0

Ans:-C

28. $\lim_{x \rightarrow 2} \frac{x^2 - 5x + 6}{x - 2} = \underline{\hspace{2cm}}.$

A. 1

B. -1

C. 2

D. 3

Ans:-B

29. $\lim_{\theta \rightarrow 0} \frac{\sin 4\theta}{\tan 3\theta} = \underline{\hspace{2cm}}.$

A. $-\frac{3}{4}$

B. $\frac{3}{4}$

C. $-\frac{4}{3}$

D. $\frac{4}{3}$

Ans:-D

30. $\lim_{x \rightarrow \infty} \left(1 + \frac{2}{x}\right)^{5x} = \underline{\hspace{2cm}}.$

A. e^{25}

B. e^2

C. e^5

D. e^{10}

Ans:-D

31. $\lim_{y \rightarrow 3} \left(\frac{3^y - 1}{y} \right) = \underline{\hspace{2cm}}.$

- A. $\log_e 3$
C. $\log_e e$

- B. $\log_3 e$
D. $\log_3 3$

Ans:-A

32. $\lim_{\theta \rightarrow 0} \left(\frac{1 - \cos \theta}{\theta^2} \right) = \underline{\hspace{2cm}}.$

- A. 0
C. $\frac{1}{2}$

- B. 1
D. 2

Ans:-C

33. $\lim_{x \rightarrow \infty} \frac{x^2 + 3x + 2}{x^2 + 2x + 3} = \underline{\hspace{2cm}}.$

- A. 1
C. 2

- B. 0
D. 3

Ans:-A

34. $\lim_{x \rightarrow \infty} \frac{1}{x} = \underline{\hspace{2cm}}.$

- A. 1
C. x

- B. 0
D. e

Ans:-B

35. $\lim_{x \rightarrow a} \frac{x^n - a^n}{x - a} = \underline{\hspace{2cm}}.$

- A. na^{n-1}
C. na^{n+1}

- B. nx^{n-1}
D. nx^{n+1}

Ans:-A

36. $\lim_{\frac{1}{m} \rightarrow 0} (1 + m)^{\frac{1}{m}} = \underline{\hspace{2cm}}.$

- A. 1
C. x

- B. 0
D. e

Ans:-A