

GUJARAT TECHNOLOGICAL UNIVERSITY
Diploma Engineering – SEMESTER – 1(CtoD) – EXAMINATION – Winter-2024

Subject Code: C300001

Date: 22-01-2025

Subject Name: Basic Mathematics

Time: 10:30 AM TO 12:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make Suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Use of simple calculators and non-programmable scientific calculators are permitted.
5. English version is authentic.
6. Use only OMR to answer this question paper.

No. Question Text and Option. નીચે આપેલ વિકલ્પો.

1. $\log_{2024} 2024 = \underline{\hspace{2cm}}$

- | | |
|---------|------|
| A. 1 | B. 3 |
| C. 2024 | D. 8 |

૧. $\log_{2024} 2024 = \underline{\hspace{2cm}}$

- | | |
|---------|------|
| A. 1 | B. 3 |
| C. 2024 | D. 8 |

2. $x^{2\log_x 4} = \underline{\hspace{2cm}}$

- | | |
|----------|----------|
| A. x | B. 4 |
| C. 4^2 | D. x^2 |

૨. $x^{2\log_x 4} = \underline{\hspace{2cm}}$

- | | |
|----------|----------|
| A. x | B. 4 |
| C. 4^2 | D. x^2 |

3. $10\log_e 1 = \underline{\hspace{2cm}}$

- | | |
|--------|----------|
| A. 0 | B. 1 |
| C. e | D. e^e |

૩. $10\log_e 1 = \underline{\hspace{2cm}}$

- | | |
|--------|----------|
| A. 0 | B. 1 |
| C. e | D. e^e |

4. $\log\left(\frac{3}{10}\right) - \log\left(\frac{9}{10}\right) = \underline{\hspace{2cm}}$

- | | |
|-------------------------------------|-----------------------------------|
| A. $-\log\left(\frac{6}{10}\right)$ | B. $\log\left(\frac{1}{3}\right)$ |
| C. 6 | D. 10 |

૪. $\log\left(\frac{3}{10}\right) - \log\left(\frac{9}{10}\right) = \underline{\hspace{2cm}}$

- A. $-\log\left(\frac{6}{10}\right)$
 C. 6
- B. $\log\left(\frac{1}{3}\right)$
 D. 10
5. $\log(2x + 3) = 0$ then $x =$ _____
- A. -1
 C. 2
- B. 1
 D. 3
૫. $\log(2x + 3) = 0$ ત્ત $x =$ _____
- A. -1
 C. 2
- B. 1
 D. 3
6. $5\log_3 5 \cdot \log_5 7 \cdot \log_7 3 =$ _____
- A. 5
 C. 1
- B. 4
 D. 0
૬. $5\log_3 5 \cdot \log_5 7 \cdot \log_7 3 =$ _____
- A. 5
 C. 1
- B. 4
 D. 0
7. $a^n = b^m$ then $\frac{m}{n} =$ _____
- A. $\frac{\log a}{\log b}$
 C. $-\frac{\log a}{\log b}$
- B. $\log\left(\frac{a}{b}\right)$
 D. $\frac{\log b}{\log a}$
૭. $a^n = b^m$ ત્ત $\frac{m}{n} =$ _____
- A. $\frac{\log a}{\log b}$
 C. $-\frac{\log a}{\log b}$
- B. $\log\left(\frac{a}{b}\right)$
 D. $\frac{\log b}{\log a}$
8. Which of the following is true?
- A. $\log a + \log b = \log ab$
 C. $\log a \cdot \log b = \log ab$
- B. $\log_b a = \log_a b$
 D. $\log_a a = a$
૮. ત્તિયે પૈકી કયું સત્ય છે?
- A. $\log a + \log b = \log ab$
 C. $\log a \cdot \log b = \log ab$
- B. $\log_b a = \log_a b$
 D. $\log_a a = a$
9. $\log_{10} 0.00001 =$ _____
- A. 0
 C. -2
- B. -5
 D. -3
૯. $\log_{10} 0.00001 =$ _____
- A. 0
 C. -2
- B. -5
 D. -3
10. $6^{\log_6 5} + 3^{2\log_3 2} =$ _____
- A. 9
 C. 5
- B. 7
 D. -1
૧૦. $6^{\log_6 5} + 3^{2\log_3 2} =$ _____

- A. 9
C. 5
11. $\begin{bmatrix} 1 & 2 \\ 1 & 2 \end{bmatrix} \begin{bmatrix} 2 & 1 \\ 2 & 1 \end{bmatrix}$
A. $\begin{bmatrix} 1 & 2 \\ -2 & -1 \end{bmatrix}$
C. $\begin{bmatrix} 6 & 3 \\ 6 & 3 \end{bmatrix}$
12. $\begin{vmatrix} 4 & 1 \\ 4 & 3 \end{vmatrix} = \underline{\hspace{2cm}}$
A. 1
C. 3
13. If $\begin{vmatrix} a & 3b \\ c & 3d \end{vmatrix} = 15$ then $\begin{vmatrix} 3a & 6b \\ c & 2d \end{vmatrix} = \underline{\hspace{2cm}}$
A. 5
C. 6
14. $\text{adj} \left(\text{adj} \begin{bmatrix} a & -b \\ c & -d \end{bmatrix} \right) = \underline{\hspace{2cm}}$
A. $\begin{bmatrix} a & -b \\ c & -d \end{bmatrix}$
C. $\begin{bmatrix} -d & b \\ -c & a \end{bmatrix}$
15. Choose the true from the given following
A. $A + B = B + A$
C. $AB = BA$
- B. 7
D. -1
- B. $\begin{bmatrix} 1 & 2 \\ 1 & -1 \end{bmatrix}$
D. $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$
- B. 8
D. 4
- B. 30
D. 15
- B. $\begin{bmatrix} a & b \\ c & d \end{bmatrix}$
D. $\begin{bmatrix} -a & -b \\ -c & -d \end{bmatrix}$
- B. 8
D. 4
- B. 30
D. 15
- B. $\begin{bmatrix} a & b \\ c & d \end{bmatrix}$
D. $\begin{bmatrix} -a & -b \\ -c & -d \end{bmatrix}$
- B. $A - B = B - A$
D. $A + I = A$
૧૫. નીચે આપેલ પૈકી સારું પસંદ કરો.

- A. $A + B = B + A$
 C. $AB = BA$
 16. If $A = \begin{bmatrix} 1 & -2 \\ 3 & 0 \end{bmatrix}$ then $A^T =$ _____
 A. $\begin{bmatrix} 1 & -2 \\ 3 & 0 \end{bmatrix}$
 B. $\begin{bmatrix} 1 & 3 \\ -2 & 0 \end{bmatrix}$
 C. $\begin{bmatrix} 0 & 3 \\ -2 & 1 \end{bmatrix}$
 D. $\begin{bmatrix} 1 & 2 \\ 3 & 0 \end{bmatrix}$
17. If $A = \begin{bmatrix} 1 & -2 \\ 0 & -1 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 1 \\ -1 & 1 \end{bmatrix}$ then $A + 2B =$ _____
 A. $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$
 B. $\begin{bmatrix} 2 & -1 \\ -1 & 0 \end{bmatrix}$
 C. $\begin{bmatrix} 2 & 0 \\ -2 & 1 \end{bmatrix}$
 D. $\begin{bmatrix} 3 & 0 \\ -2 & 1 \end{bmatrix}$
18. If $A = \begin{bmatrix} -1 & 0 \\ -2 & 1 \end{bmatrix}$ then $A^{TT} =$ _____
 A. $\begin{bmatrix} -1 & 0 \\ -2 & 1 \end{bmatrix}$
 B. $\begin{bmatrix} 1 & 0 \\ 2 & 1 \end{bmatrix}$
 C. $\begin{bmatrix} -1 & -2 \\ 0 & 1 \end{bmatrix}$
 D. $\begin{bmatrix} 1 & 0 \\ 2 & -1 \end{bmatrix}$
19. Order of a matrix $\begin{bmatrix} 100 & 200 & 300 \\ 400 & 500 & 600 \end{bmatrix}$ is _____
 A. 100×600
 B. 2×3
 C. 3×2
 D. None of these
20. If $A = \begin{bmatrix} 1 & -2 \\ 3 & 0 \end{bmatrix}$ then $A^T =$ _____
 A. $\begin{bmatrix} 1 & -2 \\ 3 & 0 \end{bmatrix}$
 B. $\begin{bmatrix} 1 & 3 \\ -2 & 0 \end{bmatrix}$
 C. $\begin{bmatrix} 0 & 3 \\ -2 & 1 \end{bmatrix}$
 D. $\begin{bmatrix} 1 & 2 \\ 3 & 0 \end{bmatrix}$
21. If $A = \begin{bmatrix} 1 & -2 \\ 0 & -1 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 1 \\ -1 & 1 \end{bmatrix}$ then $A + 2B =$ _____
 A. $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$
 B. $\begin{bmatrix} 2 & -1 \\ -1 & 0 \end{bmatrix}$
 C. $\begin{bmatrix} 2 & 0 \\ -2 & 1 \end{bmatrix}$
 D. $\begin{bmatrix} 3 & 0 \\ -2 & 1 \end{bmatrix}$
22. If $A = \begin{bmatrix} -1 & 0 \\ -2 & 1 \end{bmatrix}$ then $A^{TT} =$ _____
 A. $\begin{bmatrix} -1 & 0 \\ -2 & 1 \end{bmatrix}$
 B. $\begin{bmatrix} 1 & 0 \\ 2 & 1 \end{bmatrix}$
 C. $\begin{bmatrix} -1 & -2 \\ 0 & 1 \end{bmatrix}$
 D. $\begin{bmatrix} 1 & 0 \\ 2 & -1 \end{bmatrix}$
23. Order of a matrix $\begin{bmatrix} 100 & 200 & 300 \\ 400 & 500 & 600 \end{bmatrix}$ is _____
 A. 100×600
 B. 2×3
 C. 3×2
 D. None of these
24. If $A = \begin{bmatrix} 1 & -2 \\ 3 & 0 \end{bmatrix}$ then $A^T =$ _____
 A. $\begin{bmatrix} 1 & -2 \\ 3 & 0 \end{bmatrix}$
 B. $\begin{bmatrix} 1 & 3 \\ -2 & 0 \end{bmatrix}$
 C. $\begin{bmatrix} 0 & 3 \\ -2 & 1 \end{bmatrix}$
 D. $\begin{bmatrix} 1 & 2 \\ 3 & 0 \end{bmatrix}$

- A. 100×600 B. 2×3
- C. 3×2 D. અમાંથી એક પણ નહીં.
20. If $A = \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$ then $4A =$ _____
- A. $\begin{bmatrix} 0 & 4 \\ 4 & 0 \end{bmatrix}$ B. $\begin{bmatrix} 0 & \frac{1}{2} \\ -1 & 2 \end{bmatrix}$
- C. $\begin{bmatrix} 0 & 4 \\ 1 & 0 \end{bmatrix}$ D. $\begin{bmatrix} 0 & 1 \\ 1 & 2 \end{bmatrix}$
૨૦. જો $A = \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$ તો $4A =$ _____
- A. $\begin{bmatrix} 0 & 4 \\ 4 & 0 \end{bmatrix}$ B. $\begin{bmatrix} 0 & \frac{1}{2} \\ -1 & 2 \end{bmatrix}$
- C. $\begin{bmatrix} 0 & 4 \\ 1 & 0 \end{bmatrix}$ D. $\begin{bmatrix} 0 & 1 \\ 1 & 2 \end{bmatrix}$
21. Any matrix A is symmetric if _____.
 A. $A^T = A$ B. $A^{-1} = A$
 C. $A^T = -A$ D. $A^{-1} = A^T$
૨૧. શ્રેણિક A સંમિત શ્રેણિક છે, જો _____.
 A. $A^T = A$ B. $A^{-1} = A$
 C. $A^T = -A$ D. $A^{-1} = A^T$
22. If $A = \begin{bmatrix} 1 & 20 \end{bmatrix}$ and $B = \begin{bmatrix} 3 \\ 4 \end{bmatrix}$ then $A + B =$ _____
- A. $\begin{bmatrix} 83 \end{bmatrix}$ B. $\begin{bmatrix} 5 \\ 6 \end{bmatrix}$
- C. $\begin{bmatrix} 4 & 6 \end{bmatrix}$ D. Not possible
૨૨. If $A = \begin{bmatrix} 1 & 20 \end{bmatrix}$ and $B = \begin{bmatrix} 3 \\ 4 \end{bmatrix}$ then $A + B =$ _____
- A. $\begin{bmatrix} 83 \end{bmatrix}$ B. $\begin{bmatrix} 5 \\ 6 \end{bmatrix}$
- C. $\begin{bmatrix} 4 & 6 \end{bmatrix}$ D. શક્ય નથી.
23. If order of a matrix A is 2×2 and order of a matrix is 2×1 then order of a matrix AB is _____.
 A. 3×2 B. 2×1
 C. 3×1 D. 2×2
૨૩. શ્રેણિક A ની કક્ષા 2×2 અને શ્રેણિક B ની કક્ષા 2×1 હોય, તો શ્રેણિક AB ની કક્ષા ____ હોય.
 A. 3×2 B. 2×1
 C. 3×1 D. 2×2
24. Which is symmetric matrix?
 A. $\begin{bmatrix} 0 & 4 \\ 1 & 0 \end{bmatrix}$ B. $\begin{bmatrix} 0 & -4 \\ 1 & 0 \end{bmatrix}$
 C. $\begin{bmatrix} 0 & 4 \\ -4 & 0 \end{bmatrix}$ D. $\begin{bmatrix} 0 & 4 \\ 4 & 0 \end{bmatrix}$

૨૪. કયો શ્રેણિક સંમિત શ્રેણિક છે ?

A. $\begin{bmatrix} 0 & 4 \\ 1 & 0 \end{bmatrix}$

B. $\begin{bmatrix} 0 & -4 \\ 1 & 0 \end{bmatrix}$

C. $\begin{bmatrix} 0 & 4 \\ -4 & 0 \end{bmatrix}$

D. $\begin{bmatrix} 0 & 4 \\ 4 & 0 \end{bmatrix}$

25. $\begin{vmatrix} 5 & 6 \\ 0 & 1+x \end{vmatrix} = \begin{vmatrix} 5 & 0 \\ 0 & 5 \end{vmatrix}$ then $x =$ _____

A. 1
C. 2

B. 4
D. 0

૨૫. $\begin{vmatrix} 5 & 6 \\ 0 & 1+x \end{vmatrix} = \begin{vmatrix} 5 & 0 \\ 0 & 5 \end{vmatrix}$ ત્લ $x =$ _____

A. 1
C. 2

B. 4
D. 0

26. If $A = \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$ then cofactor of 1 =_____

A. 0
C. 20

B. 1
D. -1

૨૬. જલ $A = \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$ ત્લ 1 નલ સહ અવયવ =_____

A. 0
C. 20

B. 1
D. -1

27. If $A = \begin{bmatrix} 1 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 3 \\ 4 \end{bmatrix}$ then $AB =$ _____

A. $\begin{bmatrix} 3 \\ 8 \end{bmatrix}$

B. $\begin{bmatrix} 11 \end{bmatrix}$

C. $\begin{bmatrix} 1 \\ 4 \end{bmatrix}$

D. $\begin{bmatrix} 12 \end{bmatrix}$

૨૭. જલ $A = \begin{bmatrix} 1 & 2 \end{bmatrix}$ અને $B = \begin{bmatrix} 3 \\ 4 \end{bmatrix}$ ત્લ $AB =$ _____

A. $\begin{bmatrix} 3 \\ 8 \end{bmatrix}$

B. $\begin{bmatrix} 11 \end{bmatrix}$

C. $\begin{bmatrix} 1 \\ 4 \end{bmatrix}$

D. $\begin{bmatrix} 12 \end{bmatrix}$

28. If $A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ then $A^2 =$ _____

A. -A
C. $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

B. 1
D. $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$

૨૮. જલ $A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ ત્લ $A^2 =$ _____

A. -A
C. $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

B. 1
D. $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$

29. Which of the following is false?

A. $\sin^2 \theta + \cos^2 \theta = 1$
C. $\sec^2 \theta = 1 + \tan^2 \theta$

B. $\operatorname{cosec}^2 \theta = 1 + \cot^2 \theta$
D. $\sin 2\theta = \sin^2 \theta$

29. નીચે પૈકી કયું બીજું છે?

- A. $\sin^2 \theta + \cos^2 \theta = 1$
C. $\sec^2 \theta = 1 + \tan^2 \theta$

- B. $\operatorname{cosec}^2 \theta = 1 + \cot^2 \theta$
D. $\sin 2\theta = \sin^2 \theta$

30. $\sin\left(\frac{\pi}{2} - \theta\right) = \underline{\hspace{2cm}}$

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

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

30. $\sin\left(\frac{\pi}{2} - \theta\right) = \underline{\hspace{2cm}}$

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

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

31. $\cot^{-1}(\sqrt{3}) = \underline{\hspace{2cm}}$

- A. $\frac{\pi}{3}$
C. 0

- B. $\frac{\pi}{6}$
D. 1

31. $\cot^{-1}(\sqrt{3}) = \underline{\hspace{2cm}}$

- A. $\frac{\pi}{3}$
C. 0

- B. $\frac{\pi}{6}$
D. 1

32. $\sin^{-1}\left(\frac{1}{3}\right) + \cos^{-1}\left(\frac{1}{3}\right) = \underline{\hspace{2cm}}$

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

- B. $\frac{\pi}{4}$
D. 0

32. $\sin^{-1}\left(\frac{1}{3}\right) + \cos^{-1}\left(\frac{1}{3}\right) = \underline{\hspace{2cm}}$

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

- B. $\frac{\pi}{4}$
D. 0

33. $\frac{\pi}{3}$ radians = $\underline{\hspace{2cm}}$ degrees

- A. 0
C. 30

- B. 60
D. 90

33. $\frac{\pi}{3}$ રેડિયન = $\underline{\hspace{2cm}}$ ડિગ્રી

- A. 0
C. 30

- B. 60
D. 90

34. $\cos(A - B) = \underline{\hspace{2cm}}$

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

- B. $\cos A \cos B + \sin A \sin B$
D. $\sin A \sin B + \cos A \cos B$

34. $\cos(A - B) = \underline{\hspace{2cm}}$

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

- B. $\cos A \cos B + \sin A \sin B$
D. $\sin A \sin B + \cos A \cos B$

35. $\sin^2 20^\circ + \sin^2 70^\circ = \underline{\hspace{2cm}}$

- A. 0

- B. 20

- C. 1
34. $\sin^2 20^\circ + \sin^2 70^\circ =$ _____
A. 0
C. 1
- D. 50
B. 20
D. 50
36. Principal period of $\sin(x + 25) =$ _____
A. 0
C. $\frac{\pi}{2}$
B. 25π
D. 2π
35. $\sin(x + 25)$ ની મુખ્ય અવર્તમાત્ર = _____
A. 0
C. $\frac{\pi}{2}$
B. 25π
D. 2π
37. $\cos(-\theta) =$ _____
A. $\cos \theta$
C. $\sin \theta$
B. $-\cos \theta$
D. $-\sin \theta$
39. $\cos(-\theta) =$ _____
A. $\cos \theta$
C. $\sin \theta$
B. $-\cos \theta$
D. $-\sin \theta$
38. $\tan^{-1}\left(\frac{3}{5}\right) + \tan^{-1}\left(\frac{5}{3}\right) =$ _____
A. $\frac{\pi}{4}$
C. 0
B. $\frac{\pi}{2}$
D. 1
36. $\tan^{-1}\left(\frac{3}{5}\right) + \tan^{-1}\left(\frac{5}{3}\right) =$ _____
A. $\frac{\pi}{4}$
C. 0
B. $\frac{\pi}{2}$
D. 1
39. $\sin^{-1}\left(\cos \frac{\pi}{6}\right) =$ _____
A. $\frac{\pi}{3}$
C. $\frac{\pi}{6}$
B. $\frac{2\pi}{3}$
D. $\frac{3\pi}{2}$
36. $\sin^{-1}\left(\cos \frac{\pi}{6}\right) =$ _____
A. $\frac{\pi}{3}$
C. $\frac{\pi}{6}$
B. $\frac{2\pi}{3}$
D. $\frac{3\pi}{2}$
40. $\log\left(\cot \frac{\pi}{4}\right) =$ _____
A. 1
C. 0
B. -1
D. $\frac{\pi}{4}$
30. $\log\left(\cot \frac{\pi}{4}\right) =$ _____
A. 1
B. -1

- C. 0
41. $\begin{vmatrix} \log \sin \theta & -1 \\ \log \operatorname{cosec} \theta & 1 \end{vmatrix} = \underline{\hspace{2cm}}$
- A. $\log \sin \theta$
C. $-\log \sin \theta$
42. $\begin{vmatrix} \sin \theta & -\cos \theta \\ \cos \theta & \sin \theta \end{vmatrix} = \underline{\hspace{2cm}}$
- A. $\sin \theta$
C. 0
43. If $\sin \theta = \frac{1}{3}$ then $\operatorname{cosec} \theta = \underline{\hspace{2cm}}$
- A. 2
C. 3
44. If $\sin \theta = \frac{1}{\sqrt{2}}$ then $\sin 2\theta = \underline{\hspace{2cm}}$
- A. $\frac{1}{\sqrt{2}}$
C. 1
45. $\vec{i} \cdot \vec{j} = \underline{\hspace{2cm}}$
- A. 1
C. -1
46. $\vec{a} = (2, -1, 1), \vec{b} = (1, 2, 2)$ then $\vec{a} \cdot \vec{b} = \underline{\hspace{2cm}}$
- A. 1
C. -1
- D. $\frac{\pi}{4}$
- B. 0
D. 1
- B. 0
D. 1
- B. $\cos \theta$
D. 1
- B. 1
D. $\frac{2}{3}$
- B. 1
D. $\frac{2}{3}$
- B. $\sqrt{2}$
D. 0
- B. $\sqrt{2}$
D. 0
- B. 0
D. $\frac{1}{2}$
- B. 0
D. $\frac{1}{2}$
- B. 2
D. -2

૪૬. $\vec{a} = (2, -1, 1), \vec{b} = (1, 2, 2)$ તો $\vec{a} \cdot \vec{b} =$ _____
 A. 1 B. 2
 C. -1 D. -2
47. $\vec{a} = (2, -2, 3), \vec{b} = (-2, 2, 2)$ then $\vec{a} + \vec{b} =$ _____
 A. (1, 1, 1) B. (-2, -2, -6)
 C. (0, 0, 5) D. (-1, 2, -2)
૪૯. $\vec{a} = (2, -2, 3), \vec{b} = (-2, 2, 2)$ તો $\vec{a} + \vec{b} =$ _____
 A. (1, 1, 1) B. (-2, -2, -6)
 C. (0, 0, 5) D. (-1, 2, -2)
48. $|(4, 0, 3)| =$ _____
 A. -5 B. 5
 C. 3 D. 1
૪૮. $|(4, 0, 3)| =$ _____
 A. -5 B. 5
 C. 3 D. 1
49. Which of the following is a unit vector?
 A. (0, 1) B. $(\sin \theta, \sin \theta)$
 C. (-1, -1) D. (-1, 1)
૪૯. નીચે પૈકી કયો એકમ સદિશ છે ?
 A. (0, 1) B. $(\sin \theta, \sin \theta)$
 C. (-1, -1) D. (-1, 1)
50. $\vec{j} \times \vec{j} =$ _____
 A. $\vec{i}$ B. $\vec{j}$
 C. $\vec{k}$ D. $\vec{0}$
૫૦. $\vec{j} \times \vec{j} =$ _____
 A. $\vec{i}$ B. $\vec{j}$
 C. $\vec{k}$ D. $\vec{0}$
51. If $(4, -1, p)$ and $(1, 0, -1)$ are perpendicular to each other then $p =$ _____
 A. 0 B. 1
 C. -1 D. 4
૫૧. જો $(4, -1, p)$ અને $(1, 0, -1)$ પરસ્પર લંબ હોય તો $p =$ _____
 A. 0 B. 1
 C. -1 D. 4
52. A vector perpendicular to both the vectors $\vec{a}$ and $\vec{b}$ is _____
 A. $\vec{a}$ B. $\vec{b}$
 C. 0 D. $\vec{a} \times \vec{b}$
૫૨. સદિશ $\vec{a}$ અને સદિશ $\vec{b}$ બન્નેને લંબ હોય તેવો સદિશ _____ છે.
 A. $\vec{a}$ B. $\vec{b}$
 C. 0 D. $\vec{a} \times \vec{b}$
53. Unit vector in direction of vector $(2, -1, -2)$ is _____
 A. $\left(\frac{2}{3}, -\frac{1}{3}, -\frac{2}{3}\right)$ B. $\left(-\frac{2}{3}, \frac{1}{3}, \frac{2}{3}\right)$

- C. $(1, -1, 1)$ D. $(1, 1, 1)$
૫૩. સદિશ $(2, -1, -2)$ ની દિશામાં એકમ સદિશ _____ છે.
 A. $\left(\frac{2}{3}, -\frac{1}{3}, -\frac{2}{3}\right)$ B. $\left(-\frac{2}{3}, \frac{1}{3}, \frac{2}{3}\right)$
 C. $(1, -1, 1)$ D. $(1, 1, 1)$
54. Angle made by vector $\vec{x} = \vec{j}$ with X-axis is _____.
 A. $\frac{\pi}{4}$ B. $\frac{\pi}{2}$
 C. 0 D. π
૫૪. સદિશ $\vec{x} = \vec{j}$ એ X-અક્ષ સાથે બનાવેલ ખૂણો _____ છે.
 A. $\frac{\pi}{4}$ B. $\frac{\pi}{2}$
 C. 0 D. π
55. If a particle displaced from a point $(1, 2, 1)$ to a point $(0, 2, 3)$ Under an effect of a constant force $(2, 4, 6)$, then the work done by a force is _____.
 A. 5 units B. -5 units
 C. 1 units D. 10 units
૫૫. જો કોઈ કણ અચળ બળ $(2, 4, 6)$ ની અસર હેઠળ બિંદુ $(1, 2, 1)$ થી બિંદુ $(0, 2, 3)$ સુધી સ્થાનાંતર કરે, તો તે બળ દ્વારા થયેલ કાર્ય _____ ગણાય.
 A. 5 એકમ B. -5 એકમ
 C. 1 એકમ D. 10 એકમ
56. For any vectors $\vec{a}$ and $\vec{b}$, $|\vec{a} + \vec{b}|$ _____ $|\vec{a}| + |\vec{b}|$.
 A. $>$ B. $\geq$
 C. $=$ D. $\leq$
૫૬. કોઈ પણ સદિશ $\vec{a}$ અને $\vec{b}$ માટે, $|\vec{a} + \vec{b}|$ _____ $|\vec{a}| + |\vec{b}|$.
 A. $>$ B. $\geq$
 C. $=$ D. $\leq$
57. For any vector $\vec{a} \neq 0$, vector $\frac{\vec{a}}{|\vec{a}|}$ is always _____.
 A. Unit vector B. Zero vector
 C. Constant vector D. Scalar
૫૭. કોઈ પણ સદિશ $\vec{a} \neq 0$ માટે, સદિશ $\frac{\vec{a}}{|\vec{a}|}$ એ હંમેશા _____ હોય.
 A. એકમ સદિશ B. શૂન્ય સદિશ
 C. અચળ સદિશ D. અદિશ
58. Direction cosines of a vector $\vec{a} = (-2, 2, -1)$ is _____.
 A. $\frac{-2}{3}, \frac{2}{3}, \frac{-1}{3}$ B. $-\frac{2}{3}, -\frac{2}{3}, \frac{1}{3}$
 C. $2, 2, -1$ D. $-2, -2, 1$
૫૮. સદિશ $\vec{a} = (-2, 2, -1)$ ની દિક્કોસાઇન _____ છે.
 A. $\frac{-2}{3}, \frac{2}{3}, \frac{-1}{3}$ B. $-\frac{2}{3}, -\frac{2}{3}, \frac{1}{3}$
 C. $2, 2, -1$ D. $-2, -2, 1$
59. For any vector $\vec{a}$, $\vec{a} \times 2\vec{a} =$ _____.
 A. $2|\vec{a}|^2$ B. 1

- C. $\bar{a}$ D. $\bar{0}$
૫૯. કોઈ પણ સદિશ $\bar{a}$ માટે, $\bar{a} \times 2\bar{a} =$ _____
- A. $2|\bar{a}|^2$ B. 1
C. $\bar{a}$ D. $\bar{0}$
60. For any vector $\bar{a}$, $\bar{a} \cdot \bar{a} =$ _____
- A. $\bar{0}$ B. 1
C. $\bar{a}$ D. $|\bar{a}|^2$
૬૦. કોઈ પણ સદિશ $\bar{a}$ માટે, $\bar{a} \cdot \bar{a} =$ _____
- A. $\bar{0}$ B. 1
C. $\bar{a}$ D. $|\bar{a}|^2$
61. The area of a circle whose diameter is 14 cm is _____ sq.cm.
- A. 144 B. 154
C. 134 D. 124
૬૧. 14 સે.મી. વ્યાસ ના વર્તુળનું ક્ષેત્રફળ _____ ચો.સેમી. થાય.
- A. 144 B. 154
C. 134 D. 124
62. Volume of cone with radius ' r ' and height ' h ' is = _____
- A. $\pi r h$ B. $2\pi r h$
C. $\pi r^3 h$ D. $\frac{\pi r^3 h}{3}$
૬૨. ' r ' ત્રિજ્યા અને ' h ' ઊંચાઈ વાળા શંકુ નું ઘનફળ = _____
- A. $\pi r h$ B. $2\pi r h$
C. $\pi r^3 h$ D. $\frac{\pi r^3 h}{3}$
63. The radius of a circle made from 4.4 m long wire will be _____ cm.
- A. 70 B. 22
C. 14 D. 12
૬૩. 4.4 મી લાંબા તારમાંથી બનાવેલ વર્તુળની ત્રિજ્યા _____ સેમી હશે.
- A. 70 B. 22
C. 14 D. 12
64. Area of a right triangle with base ' b ' and height ' h ' is:
- A. $\frac{1}{2}bh$ B. $2bh$
C. bh D. πbh
૬૪. આધાર ' b ' અને ઊંચાઈ ' h ' સાથે કાટકોણ ત્રિકોણનું ક્ષેત્રફળ _____ છે:
- A. $\frac{1}{2}bh$ B. $2bh$
C. bh D. πbh
65. The perimeter of a rectangle with length ' l ' and width ' l ' is:
- A. $l + b$ B. $4l$
C. $2lb$ D. $2(l + b)$
૬૫. લંબાઈ ' l ' અને પહોળાઈ ' l ' સાથેના ચોરસની પરિમિતિ _____ છે.
- A. $l + b$ B. $4l$
C. $2lb$ D. $2(l + b)$

66. Area of a rhombus whose diagonals are of lengths 10 cm and 5 cm is _____ sq. cm.
 A. 25 B. 28
 C. 21 D. 42
૬૬. જેના કર્ણની લંબાઈ 10 અને 5 સેમી છે તેવા સમયતુર્બુજનું ક્ષેત્રફળ _____ ચો.સેમી થાય.
 A. 25 B. 28
 C. 21 D. 42
67. 1 cm = _____ m
 A. 0.1 B. 10
 C. 100 D. 0.01
૬૭. 1 સેમી = _____ મી
 A. 0.1 B. 10
 C. 100 D. 0.01
68. Area of square having perimeter 40 cm is _____ sq.cm.
 A. 4 B. 10
 C. 16 D. 100
૬૮. 40 સેમી પરિમિતિ ધરાવતા ચોરસનું ક્ષેત્રફળ _____ ચો.સેમી છે.
 A. 4 B. 10
 C. 16 D. 100
69. The length of a rectangle is 2 cm more than its width and its perimeter is 12 cm, then the length and width of rectangle are of _____ and _____ cm.
 A. 2, 4 B. 4, 5
 C. 4, 2 D. 6, 8
૬૯. લંબચોરસ ની લંબાઈ તેની પહોળાઈ કરતાં 2 સેમી વધુ છે અને તેની પરિમિતિ 12 સેમી છે, તો લંબચોરસ ની લંબાઈ અને પહોળાઈ _____ સેમી અને _____ સેમી હશે.
 A. 2, 4 B. 4, 5
 C. 4, 2 D. 6, 8
70. Radius and height of a cylinder is 1 cm and 7 cm respectively then its volume = _____ cm^3
 A. 7π B. π
 C. 49π D. 45π
૭૦. નળાકાર ની ત્રિજ્યા અને ઊંચાઈ અનુક્રમે 1 અને 7 સેમી હોય તો તેનું ઘનફળ = _____ સેમી³
 A. 7π B. π
 C. 49π D. 45π