

I. Choose the correct answer: 10x1=10

1. If $(-1 \ -2 \ 4) \begin{bmatrix} 2 \\ a \\ -3 \end{bmatrix} = -10$ then the value of "a" is _____.

- a) 2 b) -4 c) 4 d) -2

2. The roots of the equation $x^2-8x+12=0$ are _____.

- i) real and equal ii) real and rational
 iii) real and irrational iv) unreal

3. If A is of order 4 x 3 and B is of order 3 x 4 then the order of BA is _____.

- a) 3 x 4 b) 4 x 4 c) 3 x 3 d) 4 x 1

4. If the number of rows and columns are not equal in a matrix then it is said to be a _____.

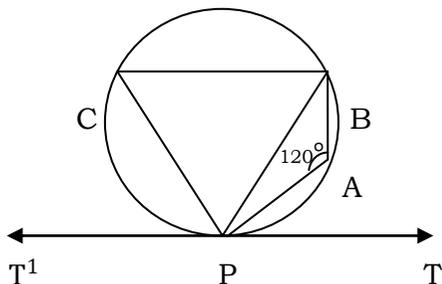
- a) diagonal matrix b) rectangular matrix
 c) square matrix d) identity matrix

5. The number of points of intersection of the quadratic polynomial $x^2 + 4x + 4$ with the x-axis is _____.

- a) 0 b) 1 c) 0 or 1 d) 2

6. In the figure, if $\angle PAB=120^\circ$ then $\angle BPT=$ _____.

- a) 120° b) 30° c) 40° d) 60°



7. Two circles of radius 8.2 cm and 3.6cm touch each other externally, the distance between the centres is _____.

- a) 1.8cm b) 4.1cm c) 4.6cm d) 11.8cm

8. A tangent is perpendicular to the radius at the _____.

- a) centre b) point of contact c) infinity d) chord

9. The two tangents from an external point P to a circle with centre at O are PA and PB. If $\angle APB=70^\circ$ then the value of $\angle AOB$ is _____.

- a) 100° b) 130° c) 120° d) 110°

10. The matrix A given by (a_{ij}) 2 x 2 if $a_{ij}=i-j$ is _____.

- a) $\begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$ b) $\begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}$ c) $\begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$ d) $\begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$

II. Answer any six of the following: 6x2=12

11. Determine the nature of the roots of the equation

$$2x^2 + x - 1 = 0$$

12. The roots of the equation $2x^2 - 7x + 5 = 0$ are α and β .

Find the value of $\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$

13. If $A = \begin{pmatrix} 5 & 2 & 2 \\ -\sqrt{17} & 0.7 & 5/2 \\ 8 & 3 & 1 \end{pmatrix}$ then verify $(A^T)^T = A$.

14. If $A = \begin{pmatrix} 0 & 4 & 9 \\ 8 & 3 & 7 \end{pmatrix}$, $B = \begin{pmatrix} 7 & 3 & 8 \\ 1 & 4 & 9 \end{pmatrix}$ find the value of $3A-9B$.

15. If A is of order p x q and B is of order q x r, what is the order of BA?

16. A tangent ST to a circle touches it at B. AB is a chord such that $\angle ABT=65^\circ$. Find $\angle AOB$ where 'O' is the centre of the circle.

17. In two concentric circles, a chord of length 16cm of larger circle becomes a tangent to the smaller circle whose radius is 6cm. Find the radius of the larger circle.

18. To get from point A to point B you must avoid walking through a pond. You must walk 34m south and 41m east. To the nearest meters, how many meters would be saved if it were possible to make away through the pond?

III. Answer any four of the following: 4x5=20

19. State and prove alternate segment theorem.

20. A bus covers a distance of 90km at a uniform speed. Had the speed been 15 km/hr more it would have taken 30 minutes less for the journey. Find the original speed of journey.

21. If the roots of the equation

$(c^2-ab)x^2 - 2(a^2-bc)x + b^2-ac = 0$ are real and equal, prove that either $a=0$ or $a^3+b^3+c^3=3abc$

22. If $A = \begin{pmatrix} 5 & 2 & 9 \\ 1 & 2 & 8 \end{pmatrix}$, $B = \begin{pmatrix} 1 & 7 \\ 1 & 2 \\ 5 & -1 \end{pmatrix}$ verify that $(AB)^T = B^T A^T$

23. 5m long ladder is placed leaning towards a vertical wall such that it reaches the wall at a point 4m high. If the foot of the ladder is moved 1.6m towards the wall, then find the distance by which the top of the ladder would slide upwards on the wall.

24. Two circles with centres O and O^1 of radii 3cm and 4cm, respectively intersect at two points P and Q such that OP and O^1P are tangents to the two circles. Find the length of the common chord PQ.

25. Find the values of x and y if

$$\begin{pmatrix} x^2 \\ y^2 \end{pmatrix} + 2 \begin{pmatrix} -2x \\ -y \end{pmatrix} = \begin{pmatrix} -5 \\ 8 \end{pmatrix}$$

IV. Answer any one of the following: 1x8=8

26. a) Draw the graph of $y=x^2-5x-6$ and hence solve

$$x^2 - 5x - 14 = 0$$

(or)

b) Draw a circle of radius 4.5cm. Take a point on the circle. Draw the tangent at that point using the alternate segment theorem.

I. Choose the correct answer: 7x1=7

1. Where were the sons of Tipu Sultan sent after Vellore Revolt?
a) Calcutta b) Mumbai c) Delhi d) Mysore
2. Who issued the Tiruchirappalli proclamation of Independence?
a) Marudhu brothers b) Pulithevar
c) Veerapandya Kattabomman d) Gopala Nayak
3. Kuyili is said to have led the unit of women soldiers named after _____.
a) Natchiyar b) Udaiyaal c) Andal d) Lakshmi
4. Assertion: Apart from the new military Regulations the most objectionable was the addition of a leather cockade in the turban.
Reason: The leather cocade was made of animal skin.
a) (A) is wrong and (R) is correct
b) Both (A) and (R) are correct and (R) is the correct explanation of (A)
c) Both (A) and (R) are wrong
d) Both (A) and (R) are correct, but (R) is not the correct explanation of (A).
5. Which one of the following rivers is flow into the Arabian Sea?
a) Periyar b) Cauvery c) Chittar d) Bhavani
6. _____ is the wettest place in Tamilnadu.
a) Cherrapunji b) Mawsynram c) Chinnakallar d) Coorg
7. Retreating monsoon wind picks up moisture from _____.
a) Arabian Sea b) Bay of Bengal
c) Indian Ocean d) Timor Sea

II. Match the following: 5x1=5

- | | | |
|----------------------|---|---------------------|
| 8. a) Gopala Nayak | - | June to September |
| b) Col. Fan Court | - | Panchalamkurichi |
| c) Kattabomman | - | October to December |
| d) Southwest Monsoon | - | Dindigul |
| e) Northeast Monsoon | - | Vellore Fort |

III. Fill in the blanks: 5x1=5

9. Kattabomman was hanged to death at _____.
 10. The Palayakkars system was put in place in TamilNadu by_____.
 11. The first state of India created on linguistic basis was _____.
 12. _____ is the highest peak in the Southern most part of the Eastern Ghats.
 13. _____ soil is suitable for the cultivation of tea and coffee plants.
- IV. Answer the following questions given under each caption. 1x4=4
14. Velunachiyar
 - a) Who was the military chief of Velunachiyar?
 - b) What were the martial arts in which she was trained?
 - c) Whom did she marry?
 - d) What was the name of her daughter?

V. Answer any eight of the following in brief: 8x2=16

15. What was the significance of the Balt of Kalakadu?
16. Point out the importance of the Treaty of 1801.
17. What were the duties of the Palayakarars ?
18. Why was Heron dismissed from service?
19. How is coastal plain formed?
20. Name the tributaries of River Thamirabarani.
21. What is 'Teri'?
22. Why is Alluvial soil fertile?
23. Write a note on Ondiveeran.

VI. Distinguish between the following: 1x2=2

24. Tropical evergreen and Tropical deciduous forests.

VII. Give reason: 1x1=1

25. Eastern Ghats are not a continuous range.

VIII. Answer any two of the following in detail: 2x5=10

26. Write an account on River Cauvery.
27. Account for the outbreak of Vellore Revolt in 1806
28. What is desertification? Write about the areas affected by it in TamilNadu.