## Section-A (Questions from 1 to 4 carry 1 mark each)

1. If the area of an equilateral triangle is $16 \sqrt{3} \mathrm{~cm}$, then its perimeter is?
2. Find the zero of the polynomial $p(x)=x$.
3. The distance of the point $(-6,-2)$ from $y$-axis is.
4. The compliment of an angle ' $m$ ' is?

## Section-B (Questions from 5 to 10 carry 2 marks each)

5. Represent $\sqrt{13}$ on the number line.
6. Prove that if a transversal intersects two parallel lines then each pair of alternate interior angles is equal.
7. Find the value of $k$ if $(x-1)$ is a factor of $4 x^{3}+3 x^{2}-4 x+k$.
8. A policeman and a thief are equidistant from a jewel box . Upon considering jewel box as origin, the position of policeman is $(0,5)$, if the ordinate of the position of thief is zero, then write the coordinates of the position of the thief.
9. Find the cost of turfing a triangular field at the rate of Rs $5 / \mathrm{m}^{2}$ having lengths of its sides as $40 \mathrm{~m}, 70 \mathrm{~m} \& 90 \mathrm{~m}$. (Take $\sqrt{20}=4.47$ ).
10. Factorise $21 x^{2}-2 x+\frac{1}{21}$
11. If $\frac{2}{\sqrt{3}+\sqrt{5}}+\frac{5}{\sqrt{3}-\sqrt{5}}=a \sqrt{3}+b \sqrt{5}$, find $a \& b$.
12. Factorise $a^{12} y^{4}-a^{4} y^{12}$.
13. Factorise $x^{2}+3 \sqrt{3} x-30$.
14. If a transversal intersects two lines such that the bisectors of a pair of corresponding angles are parallel, then prove that the two lines are parallel.
15. In figure, POQ is a line. Ray OR is perpendicular to line PQ . OS is another ray lying between rays OP and OR. Prove that: $\angle \mathrm{ROS}=1 / 2(\angle \mathrm{QOS}-\angle \mathrm{POS})$.

## Downloaded from www.studiestoday.com


16. Write the mirror image of the following points on X -axis and Y -axis:
i) $\quad(2,-3)$
ii) $(0,4)$
iii) $(3.5,-2)$
iv) $(-2,0.5)$
v) $(-5,-4.4)$
vi) $\quad(0.5,-1)$
17. A field is in the shape of a trapezium whose parallel sides are 50 m and 15 m . The non-parallel sides are 20 m and 25 m . Prove that the area of the trapezium is $\frac{1300 \sqrt{6}}{7} \mathrm{~m}^{2}$.
18. If $x^{2}-1$ is a factor of $p x^{4}+\mathrm{qx}^{3}+r x^{2}+s x+t$, show that $p+r+t=q+s=0$
19. If $\mathrm{a}+\mathrm{b}+\mathrm{c}=0$ then prove that $\frac{(b+c)^{2}}{3 b c}+\frac{(c+a)^{2}}{3 a c}+\frac{(a+b)^{2}}{3 a b}=1$
20. Represent $\sqrt{x}$ on the number line where x is any positive real number.

## Section-D (Questions from 21 to 31 carry 4 marks each)

21. Express $2.123333 \ldots$ in the form of $\frac{p}{q}$ where p and q are integers and q is non zero.
22. If $x=3-2 \sqrt{2}$, find $x^{3}-\frac{1}{x^{3}}$
23. Simplify and factorise $(a+b+c)^{2}-(a-b-c)^{2}+4 b^{2}-4 c^{2}$
24. The polynomial $b x^{3}+3 x^{2}-3$ and $2 x^{3}-5 x+b$ when divided by $x-4$ leaves the remainders $R_{1}$ and $R_{2}$. Find the value of $b$ if $2 R_{1}-R_{2}=0$
25. The side QR of $\triangle \mathrm{PQR}$ is produced to a point S . If the bisectors of $\angle \mathrm{PQR}$ and $\angle \mathrm{PRS}$ meet at point T , then prove that $\angle \mathrm{QTR}=1 / 2 \angle \mathrm{QPR}$.
26. The bisectors of $\angle \mathrm{ABC} \& \angle \mathrm{BCA}$ intersect each other at point O . Prove that $\angle \mathrm{BOC}=$ $90^{\circ}+1 / 2 \angle \mathrm{~A}$.
27. Evaluate : $(\sqrt{5+2 \sqrt{6}})+(\sqrt{8-2 \sqrt{15}})$
28. If $a^{2}+b^{2}+c^{2}=280 \& a b+b c+c a=9 / 2$, find $(a+b+c)^{3}$.
29. Find the area of a triangle two sides of which are 18 cm and 10 cm and the perimeter is 42 cm .
30. Draw a quadrilateral with vertices $A(2,2) B(2,-2) C(-2,-2) D(-2,2)$. Classify the quadrilateral and also find its area.
31. State and prove factor theorem?
