

NEW VISION SCHOOL- KHAMMAM

Class : X

CBSE Sample Paper

Sub : Maths

Time : 3hrs

Marks : 90

General Instructions.

- i) All Questions are compulsory
- ii) The Questions paper consists of 34 questions divided in to four section – A, B, C, and D.
- iii) Section A contains 4 Questions of 1 mark each, which are multiple choice type questions, section B contains 8 questions of 2 marks each, section C contains 10 questions of 3 marks each, and section D contains 10 questions of 4 marks each.
- iv) Use of calculator is not permitted.

Section – A

Question numbers 1 to 4 carry 1 marks each.

1. No. of diagonals of a pentagon has _____ ()
 a) 2 b) 4 c) 5 d) 7
2. The probability of getting 53 Fridays in a leap year is _____ ()
 a) $\frac{2}{7}$ b) $\frac{1}{7}$ c) $\frac{3}{7}$ d) none
3. If P,Q are the points of trisection of line segment joining $(x, 0)$ and $(0, y)$ then midpoint of \overline{PQ} is _____ ()
 a) $\left(\frac{x}{3}, \frac{y}{3}\right)$ b) $\left(\frac{x}{2}, \frac{y}{2}\right)$ c) (x, y) d) none
4. The angle in major segment of the circle is _____ ()
 a) acute b) obtuse c) 90° d) 200°

Section – B

Question numbers 5 to 10 carry 2 marks each.

5. If α, β are the roots of the quadratic equation $x^2 - px + q = 0$, find $\frac{\alpha^2}{\beta} + \frac{\beta^2}{\alpha}$
6. The 6th term of an A.P. is -10 and the 10th term is -26 Determine the 15th term of the A.P.
7. Find the distance between the points $(a \cos \theta + b \sin \theta, 0)$ and $(0, a \sin \theta - b \cos \theta)$ where θ is acute.
8. The area of sector is $\frac{5}{18}$ of the circle. Find the angle at the centre with the corresponding arc.
9. Prove that the angle between the two tangents drawn from an external point of a circle is supplementary to the angle subtended by the line segment joining the point of contact at the centre.
10. A bag contains 7 red, 5 white and 3 black balls. A ball is drawn at random from the bag. Find the probability that the drawn ball is.
 - i) red ball
 - b) not black
 - c) neither white nor red

Section – C

Question numbers 11 to 20 carry 3 marks each.

11. Solve $3x^2 = -7x - 2$ by completing square method
12. The sum of first six terms of an A.P. is 42. The ratio of its 10th term to 30th term is 1 : 3 calculate the first term and 13th term of an A.P.
13. If all the sides of a parallelogram touch a circle, show that the parallelogram is a rhombus.
14. The centroid of the triangle with vertices $(x, y), (y, z), (z, x)$ is at origin. Then find
$$\frac{x^3 + y^3 + z^3}{3xyz}$$
15. Draw a circle of radius 4.5cm. Take a point 'p' outside the circle. From this point draw tangents to the circle without using its centre.
16. A horse is tied to a peg at one corner of a square shaped grass field of side 15m by means of a 5m long rope.
17. Water is flowing at the rate of 15 km / hr through a pipe of diameter 14cm into a rectangular tank which is 50 m long and 44m wide. Find the time in which the level of water in the tank will rise by 21cm.
18. The king, queen, and jack of clubs are removed from a deck of 52 playing cards and then well shuffled one card is selected from the remaining cards. Find the probability of getting

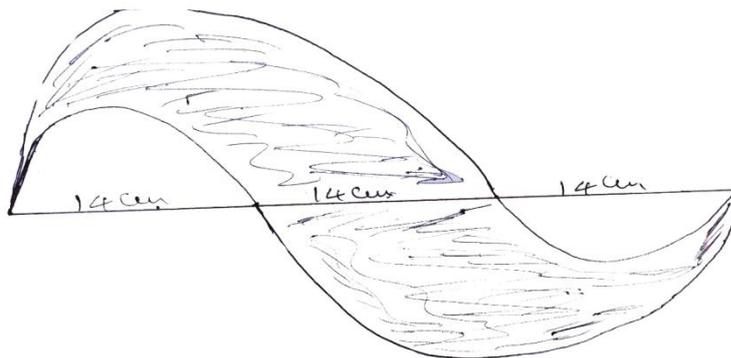
- i) a heart ii) a king iii) a club

19. A kite is flying at a height of 75m from the level ground, attached to a string inclined at 60° to the horizontal. Find the length of the string
20. A right triangle, whose sides forming the right angle are 15cm and 20 cm is made to revolve about its hypotenuse. Find the volume of the double cone so formed.

Section – D

Question numbers 21-31 carry 4 marks each.

21. A motor about whose speed is 20 km/hr in still water, takes 1 hour more to go 48 km upstream than to return downstream to the same spot. Find the speed of the stream.
22. If a, b, c are the p^{th} , q^{th} and r^{th} terms of an A.P., then prove that $\Sigma a(p-r) = 0$
23. If the co-ordinates of the midpoint of the sides of a ΔABC are $(1,1)$, $(2,-3)$ and $(3,4)$, find the co-ordinates of the vertices of ΔABC and hence find area of ΔABC
24. Draw a ΔABC with side $BC = 7\text{cm}$, $\angle B = 45^\circ$, $\angle A = 105^\circ$ then construct a triangle whose sides are $\frac{4}{3}$ times the corresponding sides of ΔABC
25. Find the perimeter of the shaded region in the given figure



26. If PAB is a secant to a circle intersecting the circle at A and B, and PT is a tangent segment then prove that $PA \cdot PB = PT^2$.

27. Let E_1 be the event of getting a prime number and E_2 be the event getting an even number when a dice rolled then prove that $P(E_1 \cup E_2) = P(E_1) + P(E_2) - P(E_1 \cap E_2)$
28. If the radii of the top and bottom of a 12cm deep tub are 20cm and 10 cm. Find its volume and cost of tin sheet used for making the tub at the rate of. ₹ 1.20 per cm^2
29. Two poles of equal heights are standing opposite to each other on either side of the road, which is 100m wide. From a point between them on the road, the angles of elevation of their tops are 30° and 60° . Find the position of the point and also the heights of the poles.
30. Metallic spheres of radii 6cm, 8cm, and 10cm respectively are melted to form a single solid sphere. Find the radius of the resulting sphere.
31. Find the ratio in which (3,0) divides the join of $(1, x)$ and $(7, -4)$ and hence find x

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