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UNIVERSAL EDUCATION CENTRE

JAYANT SHARMA (94145-37474)

MATHS 10TH

SECTION – A

Question numbers 1 to 10 carry one mark each. For each questions, four alternative choices have been provided of which only one is correct. You have to select the correct choice.

Q.1 The roots of equation are $\sqrt{2x^2+9}=9$ are

(a) x=6 (b) $x=\pm 6$ (c) x= - 6 (d) x =0

Q.2 The 10th term of the sequence $\sqrt{2}$, $\sqrt{8}$, $\sqrt{18}$, ….. is

(a) $\sqrt{162}$ (b) $\sqrt{200}$ (c) $\sqrt{242}$ (d) $\sqrt{288}$

Q.3 Two tangents TP and TQ are drawn from an external point T to a circle with centre O. If they are inclined to each other at an angle of 100˚, then the value of ∠POQ is .

(a) 60˚ (b) 80˚ (c) 100˚ (d) 70˚

Q.4 If the length of tangent from a point A at a distance of 26cm from the centre of the circle is 10cm, then the radius of the circle is. (a) 22cm (b) 24cm (c) 21cm (d) 23cm

Q.5 A tangent is perpendicular to the radius at the _____.

(a) Point of contact (b) centre (c) infinity (d) core

Q.6 A line which intersect a circle at two distinct points is called.

(a) Tangent (b) Secant (c) Point (d) Decimal

Q.7 If the radius of the base of a right – circular cylinder is halved, keeping the height same, the ratio of the volume of the reduced cylinder to that of original cylinder is. (A) 2 : 3 (b) 3 :4 (c) 1 : 4 (d) 4 : 1

Q.8 The perimeter of the sector with radius 10.5 cm and sector angle 60˚ is.

(a) 32cm (b) 23 cm (c) 41cm (d) 11cm

Q.9 The height of the tower is 100m. When the angle of elevation of sun is 30˚, then shadow of the tower is.

(a) $100\sqrt{3}$ m (b) 100m (c) $100\sqrt{3-1}$ m (d) $\frac{100}{\sqrt{3}}$ m

Q.10 A girl calculates the probability of her winning the game in a match is 0.08. What is the probability of her losing the game, (a) 91% (b) 8% (c) 92% (d) 80%

SECTION-B **Question numbers 11 to 18 carry 2 marks each.**

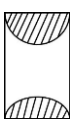
Q.11 Find the roots of the quadratic equation : $\frac{2}{5}x^2 - x - \frac{3}{5} = 0$

Q.12 If the numbers x-2, 4 x-1,& 5 x+2 are in A.P., then find the value of x.

Q.13 Prove that, in two concentric circles, the chord of larger circle, which touches the smaller circle, is bisected at the point of contact.

Q.14 A paper is in the form of a rectangle ABCD in which AB = 20cm, BC =14 cm. A semicircular portion with BC as diameter is cut off. Find the area of the remaining part . (use $\pi = \frac{22}{7}$)

Q.15 A wooden article was made by scooping out a hemisphere from each end of a solid cylinder as shown in fig . If the height of cylinder is 10cm and its base radius is 3.5 cm. Find the total surface area of article (use $\pi = \frac{22}{7}$)



Q.16 Find a point on y -axis which is equidistant from A (6,5) and B (-4.3)

Q.17 In what ratio does the point P (2,-5), divide the line segment joining A (-3,5) and B(4, -9)

Q.18 A bag contains 5 red, 8 green, & 7 white balls. One ball is drawn at random from the bag, find the probability of getting. (i) not a white ball. (ii) neither a green nor a red ball. **OR**

One card is drawn from a well shuffled deck of 52 cards. Find the probability of getting (i) a non face card (ii) a black king

SECTION-C Question numbers 19 to 28 carry 3 marks each.

Q.19 The sum of ages (in years) of a son and his father is 35 years and product of their ages is 150 years. Find their ages.

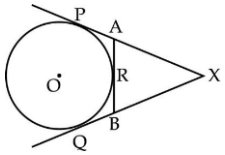
OR Solve for x : $9x^2 - 6ax + (a^2 - b^2) = 0$

Q.20 The sum of 4th and 8th terms of an A.P. is 24, and sum of 6th and 10th is 44. Find the first three terms of the A.P.

Q.21 In ΔABC, AB =AC. If the in circle of ΔABC touches the sides AB, BC and C A at D, E,F respectively prove that E bisects BC. **OR**

In figure, two tangents XP and XQ are drawn from an external point X to a circle. AB touches the circle at R.

Prove that XA+AR=XB+BR.



Q.22 Draw a triangle ABC with AB=4.5cm, AC =7.5 cm, ∠ B =90˚. Constant a triangles whose sides are $\frac{4}{5}$ times of the sides of ΔABC.

Q.23 The perimeter of a sector of a circle of radius 4.2cm is 12.8cm, find the area of the sector.

Q.24 How many coins 1.75cm in diameter and 2mm. thick must be melted to form a cuboid of dimensions 11cm x 10cm x 7cm ? (use $\pi = \frac{22}{7}$) **OR**

Water is flowing at 7m/s through a circular pipe of internal diameter of 2cm into a cylindrical tank, the radius of whose base is 40cm. Find the increase in water level in 30 minutes.

Q.25 Two men on either side of a cliff 75m high observe the angle of elevation of the top of the cliff to be 30˚ and 60˚ . Find the distance between the two men.

Q.26 Find the area of the rhombus of vertices are (3,0), (4,5), (-1,4) and (-2, -1) taken in order.

Q.27 Prove that the points (0,0), (5,5) and(-5,5) are vertices of an isosceles right triangle.

Q.28 Cards numbered 2 to 101 are placed in a box. A card is selected at random from the box, find the probability that the card selected. (i) has a number which is a perfect square. (ii) has an odd number which is not less than 70,

SECTION-D Question numbers 29 to 34 carry four marks each.

Q.29 A passenger train takes a 2 hour less for a journey of 300km, it its speed is increased by 5km/h from its usual speed. Find its usual speed. **OR**

A motor boat, whose speed is 15km/h in still water, goes 30km down stream and comes back in a total of 4 hours and 30 minutes. Determine the speed of streams.

Q.30 Find the sum of all two digit natural number which are multiple of 4.

Q.31 Prove that the length of tangents drawn from an external point to the – circle are equal.

Q.32 The internal and external diameters of hollow hemispherical vessel are 16cm and 12cm respectively. If the cost of painting 1cm^2 of the surface area is Rs 5.00, find the total cost of painting the vessel all over. (use π =3.14)

OR A Solid is composed of a cylinder with hemispherical ends. If the whole length of solid is 100 cm and diameter of the hemispherical ends is 28cm. Find the cost of polishing the surface of the solid at the rate of 5 paise per square cm. (use $\pi = \frac{22}{7}$)

Q.33 An open container made up of metal sheet in the form of frustum of a cone of height 8cm with radii of its lower and upper ends as 4cm and 10cm respectively. Find the cost of oil which can completely fill the container at the rate of Rs 50 per litre. Also find the cost of metal used, if it costs Rs 50 per 100cm^2. (use $\pi = \frac{22}{7}$)

Q.34 The angle of elevation of a jet fighter from point A on ground is 60˚. After a flight of 10 seconds, the angle changes to 30˚. If the jet is flying at a speed of 648 km/hour, find the constant height at which the jet is flying.

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