

MODEL TEST PAPER / SAMPLE PAPER

SUBJECT MATHEMATICS

CBSE SA – 2

2011

SECTION-A

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

1. The circumference of two circles are in the ratio 2: 3 then the ratio of the areas is:

- (a) 2 : 4 (b) 2 : 9 (c) 4 : 9 (d) 4 : 6

2. A silver rod of diameter 2 cm and length 12 cm is drawn into a thin wire of length 24 m of uniform thickness, and then the thickness of the wire is:

- (a) 0. 183 (b) 0.173 (c) 0.186 (d) 0.175

3. In two concentric circles, the length of tangent to inner circle is 5 cm. Find the radius of outer circle, if the radius of inner circle is 3 cm.

- (a) 5 cm (b) 4 cm (c) 3 cm (d) 2 cm

4. A point P is 13 cm from the centre of a circle. Find the length of the tangent drawn to the circle from the point P, if the radius of the circle is 5 cm.

- (a) 12 cm (b) 10 cm (c) 8cm (d) 6 cm

5. If PA and PB are tangents from a point P lying outside the circle such that PA = 10cm and angle APB, then the length of chord AB is:

- (a) 5 cm (b) 4 cm (c) 3 cm (d) 2 cm

6. If 17th term of an A.P. exceeds its 9th term by 64, then the difference is:

- (a) 8 (b) 6 (c) 4 (d) 12

7. One coin is tossed three times. The probability of getting 2 heads and 1 heads and 1 tail is:

- (a) 1/8 (b) 2/5 (c) 3/8 (d) 1/4

8. A vertical stick 20 m long casts a shadow 16 m long. At the same time a tower casts a shadow 48 m long. Then the height of the tower is:

- (a)40 m (b) 32 m (c) 96 m (d) 60 m

9. A cone is divided into two parts by drawing a plane through mid – point of its axis, parallel to its base. The ratio of volumes of two parts is:

- (a) 2: 3 (b) 1: 2 (c) 1: 3 (d) 1: 7

10. From a point Q , the length of the tangent to a circle is 24cm and the distance of Q from the centre is 25cm. The radius of the circle is:

- (a) 7 cm (b) 12 cm (c) 15 cm (d) 24.5 cm

SECTION – B

11. For what value of P, are $2p - 1$, 7 and $3p$ three consecutive terms of an A.P.?

12. The length of the minute hand of a clock is 14 cm. Find the area swept out by the minute hand in 1 hour.
13. Find the roots of the quadratic equation $3x - \frac{8}{x} = 2$; x does not equal 0
14. If all the sides of a parallelogram touch a circle, show that the parallelogram is a rhombus.
15. A letter is drawn at random from the word 'MATHEMATICS'. Find the probability of drawing each of the different letters in the given word.
16. How many balls each of radius 1 cm can be made from a solid sphere of lead of radius 8cm?
17. It is known that a box of 500 electric tubes contains 15 defective electric tubes. One tube is taken out at this box. What is the probability that is a non - defective electric tube?
18. Find the coordinates of the points P,Q and R which divided the line segment joining A (5 , 4) and B (11 , 6) into four equal parts.

SECTION - C

19. The sum of two natural numbers is 8. Determine the numbers, if sum of their reciprocal is $\frac{8}{15}$.
20. Draw a right triangle ABC in which $AC = AB = 4.5$ cm and angle = 90 degree. Draw a triangle similar to triangle to ABC with its sides equal to $\frac{5}{4}$ th of the corresponding sides of angle ABC.
21. Prove that the tangents drawn at the ends of a chord of circle make equal angles with the chord.
22. In an A.P. the sum of first ten is - 150 and the sum of its next ten terms is - 550.
23. PA and PB are two tangents from an exterior point P to a circle of radius 5 m. If length of the chord AB is 8 cm, then find the length of the tangent.
24. Three cows are tethered with 10 m long rope at the three corners of a triangular field having sides 42 mm 20 m and 34 m. Find the area of the plot which can be grazed by the cows, also find the area of the remaining field (ungrazed).
25. The probability of selecting a red ball at random from a jar that contains only red, blue and orange balls is $\frac{1}{4}$. The probability of selecting a blue ball at random from the same jar is $\frac{1}{3}$. If this jar contains 10 orange balls, then what is the total number of balls in the jar?
26. If R (x, y) is a point on the line segment joining the points P (a, b) and Q (b, a) , then prove that $x + y = a + b$.
27. The internal and external diameters of a hollow hemispherical shell are 6cm and 10cm respectively. It is melted and recast into a solid cone of base diameter 14 cm. Find the height of the cone so formed.
28. The line segment joining the points A (2, 1) and B (5, 2) is trisected at the points P and Q such that P is nearer to A. If P also lies on the line given $2x - y + k = 0$, find the value of k.

Or

A man in a boat rowing away from a light house 100 m high takes 2 minutes to change the angle the angle of elevation of the top of the light house from 60degree to 45 degree. Find the speed of the boat.

SELECTION-D

29. If the radii of the ends of a bucket 45 cm high, are 28 cm and 7 cm. Find the capacity of bucket.

30. The side of a square exceeds the side of another square by 4 cm and the sum of the areas of the two squares is 400 sq. cm. Find the dimensions of the squares.

31. The speed of a boat in still water is 11 km/ h. It can go 12 km upstream and return downstream to the original point in 2 hours and 45 minutes. Find the speed of the stream.

32. An iron sphere of radius 'a' unites is immerse completely in water contained in a right circular cone of semi - vertical angle 30 degree , water is drained off from the cone till its surface touches the sphere. Find the volume of water remaining in the cone.

33. The sum of first 8terms of an arithmetic progression is 156. The ratio of its 12th tern to its 68th is 1: 5 Calculate the first term and the fifteenth term.

34. Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.

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