

10th Class Sample Test Paper – 2011

SECTION – A

- Q.1 If $ax^2 + bx + c = 0$ has equal roots, then $c =$
- (a) $\frac{-b}{2a}$ (b) $\frac{b}{2a}$ (c) $\frac{-b^2}{4a}$ (d) $\frac{b^2}{4a}$
- Q.2 If the first, second and last term of an A.P. are 'a, b and 2a' respectively, its sum is
- (a) $\frac{ab}{2(b-a)}$ (b) $\frac{ab}{b-a}$ (c) $\frac{3ab}{2(b-a)}$ (d) none of these
- Q.3 If TP and TQ are two tangents to a circle with centre O so that $\angle POQ = 110^\circ$, then $\angle PTQ =$
- (a) 60° (b) 70° (c) 80° (d) 90°
- Q.4 Two circles touch each other externally at C and AB is a common tangent to the circles. Then $\angle ACB =$
- (a) 60° (b) 45° (c) 30° (d) 90°
- Q.5 The length of the tangent drawn from a point 8 cm away from the centre of a circle of radius 6 cm is
- (a) $\sqrt{7}$ cm (b) $2\sqrt{7}$ cm (c) 10 cm (d) 5 cm
- Q.6 The ratio of the length of a rod and its shadow is $1:\sqrt{3}$. The angle of elevation of sun is
- (a) 30° (b) 45° (c) 60° (d) 90°
- Q.7 If the radii of two concentric circles are 15 cm and 17 cm, then length of each chord of one circle which is tangent to other is
- (a) 8 cm (b) 16 cm (c) 30 cm (d) 17 cm
- Q.8 The diameter of a sphere is 6 cm. It is melted and drawn into a wire of diameter 2mm. The length of wire is
- (a) 12 m (b) 18 m (c) 36 m (d) 66 m
- Q.9 If the perimeter of a semi-circular protractor is 66 cm, then diameter of protractor is
- (a) 42 cm (b) (c) 60° (d) 30°
- Q.10 A number x is chosen at random from the numbers -3, -2, -1, 0, 1, 2, 3 the probability that $|x| < 2$ is
- (a) $\frac{5}{7}$ (b) $\frac{2}{7}$ (c) $\frac{3}{7}$ (d) $\frac{1}{7}$

SECTION – B

Q.11 Solve for x: $\frac{x-1}{x-2} + \frac{x-3}{x-4} = 3\frac{1}{3}$

Q.12 Which term of A.P. 8, 14, 20, 26,... will be 72 more than its 41st term?

Q.13 If all the side of a parallelogram touch a circle, show that the parallelogram is a rhombus.

Q.14 The minute hand of a clock is $\sqrt{21}$ cm . Find the area described by the minute hand on face of the clock between 7 a.m. to 7.35 a.m.

Q.15 50 circular plates each of diameter 14 cm and thickness 0.5 cm are placed one above the other to form a right circular cylinder. Find its total surface area.

Q.16 If (-3, a) is image of point (1, a + 4) in point (b, 1), find the value of a and b.

Q.17 Find the relation between x and y if the points (x,y) , (1,2) and (7,0) are collinear.

Q.18 Find the probability that the month of February may have 5 Tuesdays in (i) a leap year (ii) a non-leap year

OR

From the deck of 52 cards 2 black kings and 2 black jacks are removed. From the remaining cards find the probability that the card drawn is (i) neither an ace nor king (ii) black card or king (iii) face card (iv) red or jack

SECTION – C

Q.19 Find the value of k so that the equation has equal roots: $x^2 - 2(5 + 2k)x + 3(7 + 10k) = 0$ OR,

If the roots of the equation $(b - c)x^2 + (c - a)x + (a - b) = 0$ are equal then prove that $2b = a + c$.

Q.20 Find the sum of three digit numbers which leave remainder 2 when divided by 7.

Q.21 In ΔABC having sides $BC = 8$ cm, $AC = 10$ cm and $AB = 12$ cm a circle is inscribed touching the sides AB at D, BC at E and AC at F. Find AD, BE and CF.

OR

A circle is touching the side BC of ΔABC at P and touching AB and AC produced at Q and R respectively. Prove that $AQ = \frac{1}{2}(\text{perimeter of } \Delta ABC)$.

Q.22 Construct a ΔABC with $BC = 7$ cm, angle $B = 45^\circ$, angle $A = 105^\circ$ Then construct a triangle similar to given triangle such that each side of the new triangle is $\frac{4}{3}$ of given triangle.

Q.23 Two circular flower beds are on the two sides of a square lawn ABCD of side 56 m. If the centre of each circular flower bed is the point of intersection O of the diagonals of the square lawn, find the sum of the areas of the lawn and flower beds

Q.24 If the (6,6), (10,5) and (8,4) are mid points of the sides of a triangle, find its vertices and also find area of Δ .

Q.25 Find the ratio in which the straight line $x - y - 2 = 0$ divides the line segment joining (3,-1) and (8,9). Also find the coordinates of the point.

Q.26 The angle of elevation of an unfurnished tower at a point of distance 120 m from its base is 45° . How much the height must be raised so that the angle of elevation be 60° ?

Q.27 A bucket is in form of a frustum of a cone and holds 28.490 litres of water. The radii of the top and bottom are 28 cm and 21 cm respectively. Find the height of the bucket. OR

A hemispherical tank of radius $1\frac{1}{3}$ m is full of water. It is connected with a pipe which empties it at rate of 7 liters per second. How much time will it take to empty the tank completely?

Q.28 A card is drawn from deck of 52 cards, find the probability that card drawn is neither red nor queen, neither red nor club, neither face card nor black card, a card without number

SECTION – D

Q.29 The speed of boat in still water is 15 km/hr. It can go 30 km upstream and return downstream to original point in 4hrs and 30 minutes. Find the speed of stream.

OR

A rectangular park is to be designed whose breath is 3 m less than its length. Its area is to be 4 sq. mts more than the area of that park that has already been made in shape of an isosceles triangle with its base as the breadth of the rectangular park and of altitude 12 m. Find its length and breadth.

Q.30 A sum of Rs 1400 is to be used to give seven cash prizes to students of a school for their performance. If each prize is Rs 40 less than the preceding price, find the value of each prize.

Q.31 Prove that the radius is perpendicular to the tangent at the point of contact.

Q.32 A hollow cone is cut by a plane parallel to the base and upper portion is removed. If the curved surface of the remainder is $\frac{8}{9}$ of the curved surface of the whole cone, find the ratio of the line-segments into

which the cone's altitude is divided by the plane.

OR

The height of right circular cone is trisected by two plane parallel to its base. Show that the volume of the three portion from top are in the ratio 1 : 7 : 19.

Q.33 A ladder rest against a wall at an angle α to the horizontal. Its foot is pulled away from the wall through a distance 'a' so that it slides a distance 'b' down the wall making an angle β with the horizontal.

Show that $\frac{a}{b} = \frac{\cos \alpha - \cos \beta}{\sin \beta - \sin \alpha}$

Q.34 In figure, a crescent is formed by two circles which touch at A.

C is the centre of the large circle. The width of crescent at BD is 9 cm and at EF is 5 cm. Find the area of the shaded region.

