

QB365
Model Question Paper - 1
10th Standard CBSE

Maths

Reg.No. :

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Time : 02:00:00 Hrs

Total Marks : 100

Section - A

- 1) If the given quadratic equation $2x^2 + 2x + p = 0$ has equal roots, then $p = \dots\dots\dots$ 1
- 2) The quadratic equation $x^2 - 10x + 2 = 0$ has $\dots\dots\dots$ roots. 1
- 3) If $\sqrt{x + \sqrt{x + \sqrt{x + \dots\dots\dots}}} = 6$. then find the value of x . 1
- 4) If $x = -\frac{1}{2}$, is a solution of the quadratic equation $3x^2 + 2kx - 3 = 0$, find the value of k 1
- 5) n th term from the end $= l - (\dots\dots\dots)d$. 1
- 6) The constant difference between the consecutive terms of an A.P. is called..... 1
- 7) Which of the term of A.P. 5, 2, -1, is - 49 ? 1
- 8) What is the sum of five positive integers divisible by 6. 1
- 9) If a line and a circle have no point common, then the line lies 1
- 10) The distance between two parallel tangents drawn to a circle is equal to 1
- 11) In fig., PA and PB are tangents to the circle with centre O such that $\angle APB = 50^\circ$ Write the measure of $\angle OAB$. 1
- 12) To draw a pair of tangents to a circle which are inclined to each other at an angle of 30° , it is required to draw tangents at end points of two radii of the circle, what will be the angle between them? 1
- 13) The tangent line is to the radius through the point of contact. 1
- 14) To construct a triangle similar to a given triangle as per given scale factor which may be than or may be than 1. 1
- 15) To divide a line segment AB in the ratio 2 : 5, a ray AX is drawn such that $\angle BAX$ is acute. Then points are marked at equal intervals at AX. What is the minimum number of these points? 1
- 16) Triangle PQR is constructed similar to triangle ABC with scale factor $\frac{2}{3}$ Find triangle PQR 1
- 17) The angle of of an object viewed, is the angle formed by the line of sight with the horizontal when it is above the horizontal level. 1
- 18) A tower stands vertically on the ground. From a point on the ground, which is 100m away from the foot of the tower, the angle of elevation of the top of the tower is found to be 60° , then the height of the tower is 1
- 19) The is the line drawn from the eye of an observer to the point in the object viewed by the observer. 1
- 20) If the horizontal distance between the two trees 20m and 28m high is 15m, then distance between their tops is..... 1

Section - B

- 21) Check whether the following are quadratic equations: $(x+2)^3 = 2x(x^2-1)$ 2

22) Find the roots of the following equations: $\frac{1}{x+4} - \frac{1}{x-7} = \frac{11}{30}$, $x \neq -4, 7$ 2

23) Solve the following quadratic equation by factorisation: 2

$$12abx^2 - (9a^2 - 8b^2)x - 6ab = 0$$

24) Solve for x; 2

$$\frac{1}{x-2} + \frac{2}{x-1} = \frac{6}{x}; x \neq 0, 1, 2$$

25) Which of the following are APs? If they form an AP, find the common difference d and write three more terms. 2

1, 3, 9, 27,

26) Find the number of terms in each of the following APs. 2

18, $15\frac{1}{2}$, 13, ..., -47

27) Find the sum of first 19 terms of an A.P. whose 8th term is 41 and 13th term is 61. 2

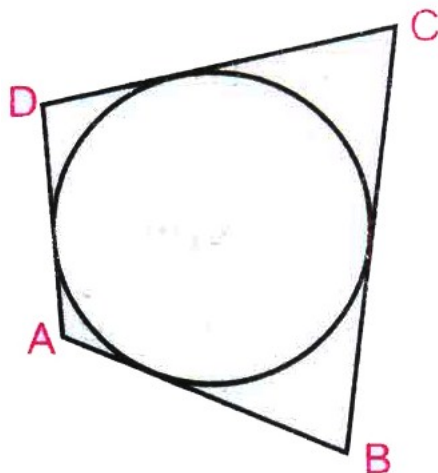
28) For the following APs, write the first term and the common difference: 2

(i) -5, -1, 3, 7,

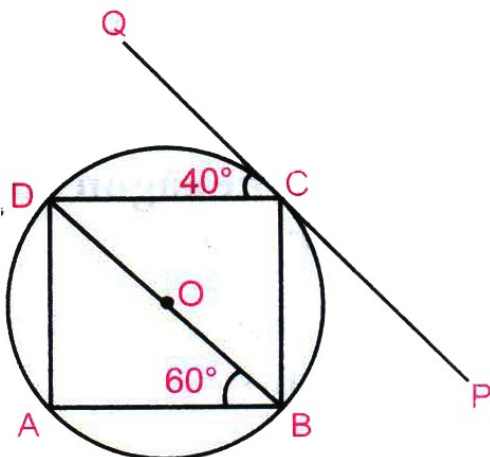
(ii) 0.6, 1.7, 2.8, 3.9, ...

29) Prove that the tangents drawn at the ends of a diameter of a circle are parallel. 2

30) In figure, a circle touches all the four sides of a quadrilateral ABCD whose sides are AB=6cm, BC=9cm and CD=8cm. Find the length of side AD. 2



31) In the figure, ABCD is a cyclic quadrilateral and PQ is tangent to the circle at C. If BD is a diameter, $\angle DCQ = 40^\circ$ and $\angle ABD = 60^\circ$ find $\angle BCP$. 2



- 32) In the given figure, all the sides of a quadrilateral ABCD touch a circle with centre O. Prove that $\angle AOB + \angle COD = 180^\circ$ and $\angle BOC + \angle AOD = 180^\circ$. 2
- OR
- Prove that the opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of circle.
- 33) Construct a $\triangle ABC$ in which $BC = 9$ cm, and $AB = 6$ cm. Then construct another triangle whose sides are $\frac{2}{3}$ of the corresponding sides of $\triangle ABC$. 2
- 34) Draw a parallelogram LMNO with $LM = 6.5$ cm, $MN = 4$ cm and angle $LMN = 45^\circ$, divide it into two triangles triangle LMN and triangle LNO by joining its diagonal LN. Construct triangle LM'N' similar to triangle LMN with scale factor $\frac{2}{3}$. Draw line O'N' \parallel ON. Is LM'N'O' a parallelogram? 2
- 35) Sanjeev have a piece of cloth of 8m long. He decided to divide this piece in two persons A and B internally in the ratio 3 : 4. 2
- (i) Draw a construction of above problem.
- (ii) If Sanjeev give 4th part of the piece to the person A, then what value is violated by Sanjeev?
- 36) Let ABC be a right triangle in which $AB = 6$ Cm, $BC = 8$ cm and $\angle B = 90^\circ$ BD is perpendicular from B to AC. The circle through BCD is drawn. Construct the tangents from A to the circle 2
- 37) Two poles of equal heights are standing opposite to each other on either side of the road. which is 80 m wide. From a point between them on the road, the angles of elevation of the top of the poles are 60° and 30° respectively. Find the height of the poles and the distance of the point from the poles. 2
- 38) A person standing on the bank of a river observes that the angle of the elevation of the top of a tree standing on the opposite bank is 60° . When he moves 40 m away from the bank, he finds the angle of elevation to be 30° . Find the height of the tree and the width of the river. ($\sqrt{3} = 1.732$). 2
- 39) The string of a kite is 100 m long. If the string is in the form of a straight line (there is no slack in the string) and makes an angle of θ with the level ground such that $\sin \theta = \frac{8}{15}$, then find the height of the kite. 2
- 40) Divide 29 into two parts so that the sum of the squares of the parts is 425. 2

Section - C

- 41) Solve for x $\frac{x-2}{x-3} + \frac{x-4}{x-5} = \frac{10}{3}$, $x \neq 3, 5$ 5
- 42) Find x in terms of a, b and c 5
- $$\frac{a}{x-a} + \frac{b}{x-b} = \frac{2c}{x-c}, x \neq a, b, c$$
- 43) If the equation $(1 + m^2)(x^2 + 2mcx + (c^2 - a^2(1 + m^2)))$ has equal roots prove that $c^2 = a^2(1 + m^2)$ 5
- 44) The minimum age of children to be eligible to participate in a painting competition is 8 years. It is observed that the age of youngest boy was 8 years and the ages of rest of participants are having a common difference of 4 months. If the sum of ages of all the participants is 168 years, find the age of eldest participant in the painting competition. 5
- 45) Find $\left(4 - \frac{1}{n}\right) + \left(7 - \frac{2}{n}\right) + \left(10 - \frac{3}{n}\right) + \dots$ upto n terms. 5
- 46) Draw triangle ABC such that $BC = 5$ cm, corresponds to $\triangle ABC$ with $A'B : AB = 3 : 2$. 5

- 47) From the top of a hill the angles of depression of two consecutive kilometre stones east are found to be 30° and 60° . Find the height of the hill. 5
- 48) Sunita is an electrician and she has to repair an electric fault on a pole of height 5 m. She needs to reach to a point on the pole 1.3 m below the top of the pole to undertake the repair work. What should be the length of the ladder that she should use which, when inclined at an angle of 60° from the horizontal, would enable her to reach the required position? Further, how far from the foot of the pole should she place the foot of the ladder? What value is indicated from this question? 5

