19th Year of quality education

Code No. **Series AG-7-1899**    TMC -D/79/89/36

**General Instructions :**
1. All question are compulsory.
2. The question paper consists of 34 questions divided into four sections A,B,C and D. Section – A comprises of 10 question of 1 mark each. Section – B comprises of 8 questions of 2 marks each. Section – C comprises of 10 questions of 3 marks each and Section – D comprises of 6 questions of 4 marks each.
3. Question numbers 1 to 10 in Section – A are multiple choice questions where you are to select one correct option out of the given four.
4. There is no overall choice. However, internal choice has been provided in 1 question of two marks, 3 questions of three marks each and 2 questions of four marks each. You have to attempt only one lf the alternatives in all such questions.
5. Use of calculator is not permitted.
6. An additional 15 minutes time has been allotted to read this question paper only.

सामान्य निर्देश :
1. सभी प्रश्न अनिवार्य हैं।
2. इस प्रश्न पत्र में 34 प्रश्न है, जो चार खण्डों में अ, ब, स व द में विभाजित है। खण्ड – अ में 10 प्रश्न हैं और प्रत्येक प्रश्न 1 अंक का है। खण्ड – ब में 8 प्रश्न हैं और प्रत्येक प्रश्न 2 अंको के हैं। खण्ड – स में 10 प्रश्न हैं और प्रत्येक प्रश्न 3 अंको का है। खण्ड – द में 6 प्रश्न हैं और प्रत्येक प्रश्न 4 अंको का है।
3. प्रश्न संख्या 1 से 10 बहुविकल्पीय प्रश्न हैं। दिए गए चार विकल्पों में से एक सही विकल्प चुनें।
4. इसमें कोई भी सर्वोपरि विकल्प नहीं है, लेकिन आंतरिक विकल्प 1 प्रश्न 2 अंको में, 3 प्रश्न 3 अंको में और 2 प्रश्न 4 अंको में दिए गए हैं। आप दिए गए विकल्पों में से एक विकल्प का चयन करें।
5. कैलकुलेटर का प्रयोग वर्जित है।
6. इस प्रश्न–पत्र को पढ़ने के लिए 15 मिनिट का समय दिया गया है। इस अवधि के दौरान छात्र केवल प्रश्न–पत्र को पढेंगे और वे

# *Pre-Board Examination 2010 -11*

Time : 3 to $3\frac{1}{2}$ Hours    अधिकतम समय : 3 से $3\frac{1}{2}$

Maximum Marks : 80    अधिकतम अंक : 80

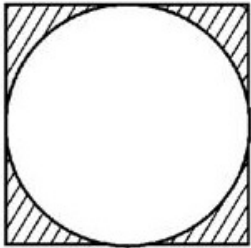Total No. Of Pages : 4    कुल पृष्ठों की संख्या : 4

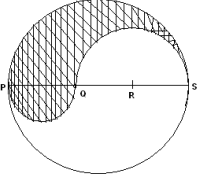## *CLASS – X      CBSE      MATHEMATICS*

**Section A**

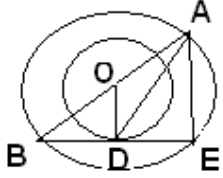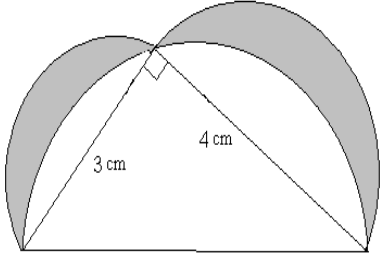| | |
|---|---|
| Q.1 | Which of the following equations has two distinct real roots ? <br><br> (a) $2x^2 - 3\sqrt{2}x + \frac{9}{4} = 0$  (b) $x^2 + 4x - 3\sqrt{2} = 0$ (c) $x^2 - 4x - 3\sqrt{2} = 0$  (d) $5x^2 - 3x + 1 = 0$ |
| Q.2 | The sum of first five multiples of 3 is <br> (a) 45  (b) 65  (c) 75  (d) 90 |
| Q.3 | The probability that a card drawn from a pack of 52 cards will be a diamond or a king is <br><br> (a) $\frac{2}{13}$  (b) $\frac{4}{13}$  (c) $\frac{1}{13}$  (d) $\frac{1}{52}$ |
| Q.4 | Two tangents making an angle of 120° with each other, are drawn to a circle of radius 6 *cm,* then the length of each tangent is equal to |

(a) $\sqrt{3}$ cm   (b)   $6\sqrt{3}$ cm   (c)   $\sqrt{2}$ cm   (d)   $2\sqrt{3}$ cm.

| Q.5 | The coordinates of the middle points of the sides of a triangle are (4, 2) ( 3, 3) and (2, 2 ), then the coordinates of its centroid are <br> (a) (3, 7/3)   (b) (3, 3) (c) (4,3)(d) none of these |
|---|---|
| Q.6 | If for an A.P. $T_4+T_8=24\,and\,T_6+T_{10}=34$ , then first term = <br> (a) $\dfrac{1}{2}$   (b) $\dfrac{3}{2}$   (c) $-\dfrac{1}{2}$   (d) $-\dfrac{3}{2}$ |
| Q.7 | If one roots of the equation $px^2-14x+8=0$ is six times the other, then p is equal to <br> (a)   2   (b)   3   (c)   1   (d)   none of these |
| Q.8 | Find the angle of elevation of the top of a tower $100\sqrt{3}$ m long, from a point at a distance of 100m , from the foot of the tower in a horizontal plane. <br> (a) $45^0$ (b) $30^0$ (c) $60^0$ (d) NONE |
| Q.9 | If the circumference of a circle is equal to the perimeter of a square then the ration of their areas is <br> (a) $22:7$ (b) $14:11$ (c)   $7:22$ (d)   $7:11$ |
| Q.10 | TP and TQ are the two tangents to a circle with centre O, so that $\angle POQ=100^0$ , then $\angle PTQ$ is equal to   (a) $60^0$ (b) $70^0$ (c) $80^0$ (d) $90^0$ |

## Section B

| Q.11 | A square is inscribed in a circle. What is the ratio of the areas of the circle and the square. . |
|---|---|
| Q.12 | Write the nature of roots of the quadratic equation $\sqrt{5}x^2-3\sqrt{6}x-\sqrt{20}=0$. . |
| Q.13 | The perimeter of a sector of a circle of radius 5 . 2 cm is 16.4 cm . Find the area of the sector. . <br> OR <br> In Fig. 2, a circle of radius 7 *cm* is inscribed in a square. Find the area of the shaded region <br><br>  <br> **Fig. 2** <br> $\left[Use\,\pi=\dfrac{22}{7}\right]$ |
| Q.14 | A coin is tossed two times. Find the probability of getting at most one head. |
| Q.15 | The  distance between  A (x,7) and B (1,3) is 5. calculate x. . |
| Q.16 | The encircle of $\Delta ABC$ touches the side AB , BC& CA at P,Q &R respectively. Show that $AP+BQ+CR=\dfrac{1}{2}$ (perimeter of $\Delta ABC$) . |
| Q.17 | If the numbers $x-2,4x-1$ and $5x+2$ are in A.P., find the value of $x$. |
| Q.18 | If the coordinates of the middle point of the line segment joining the point ( 2 , 1)(1,-3) be $(\alpha,\beta)$ , prove that $6\alpha+\beta-8=0$ . |

## Section C

| Q.19 | Cards marked with the numbers 2 to 101 are placed in a box and mixed thoroughly. One card is drawn from this box. Find the probability that the number on the card is |
|------|------|
| |     a. an even number |
| |     b. a number less than 14 |
| |     c. a number which is a perfect square |
| |     d. a prime number less than 20. |
| | <div align="center">OR</div> |
| | Two customers **SEAROSE** and **POOJA** are visiting a particular shop in the same week ( Tuesday to Saturday ). Each is equally likely to visit the shop on any day so on another day . What is the probability that both will visit the shop on (i) same day ?(ii) consecutive days?( iii )different days ? |
| Q.20 | PQRS is a diameter of a circle of radius 6 cm. The lengths PQ, QR and RS are equal. Semi-circles are drawn on PQ and QS as diameters. Find the perimeter and area of shaded region. (Use $\pi =$ <br><br><br><br>3.14) |
| Q.21 | Find the sum of the integers between 100 and 200 that are divisible by 9. |
| Q.22 | There are two poles, one each on either bank of a river. just opposite to each other. One pole is 60m high. From the top of this pole, the angles of depression of the top and the foot of the other pole are $30^0 \, and \, 60^0$ respectively. Find the width of the river and the height of the other pole. |
| Q.23 | The rain water from a roof 22m × 20 m drains into a cylindrical vessel having diameter of base 2m and height 3.5 m . If the vessel is just full, find the rainfall in cm. |
| | <div align="center">OR</div> |
| | Water flows at the rate of 10 m per minute through a cylindrical pipe having its diameter as 5mm.How much time will it take to fill a conical vessel whose diameter of base is 40cm and depth 24cm ? |
| Q.24 | Find the ratio in which the point (- 3 , p) divides the line segment joining the points (-5,-4 )&(-2 ,- 3 ) . Hence find the value of  p . |
| Q.25 | Prove that, the opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the center of the circle. |
| Q.26 | Draw a circle of 3 .4  cm radius. Take a point P out side the circle. Draw two tangents to the circle from the point P without using the center . |
| Q.27 | A copper rod of diameter 1 *cm* and length 8 *cm* is drawn into a wire of length 18 *m* of uniform thickness. Find the thickness of the wire. |
| Q.28 | If the points A(1,-2), B(2,3), C (a,2) and D(-4,-3) from a parallelogram, find the value of a and height of the parallelogram taking AB as base. |
| | <div align="center">OR</div> |
| | The co-ordinates of the vertices of  $\Delta ABC$  are A (4,1),B (-3,2) and C ( 0 , k).Given that the area of ABC is  $12 unit^2$, find the value of k. |
| | <div align="center">**Section D**</div> |
| Q.29 | A natural number, when in creased by 12, becomes equal to 160 times its reciprocal. Find the number. |
| | <div align="center">**OR**</div> |
| | Find two consecutive odd positive integers, sum of whose squares is 290. |
| Q.30 | The sum of the first, p, q, r terms of an A.P. area a, b, c respectively. Show |

| | that $\frac{a}{p}(q-r) + \frac{b}{q}(r-p) + \frac{c}{r}(p-q) = 0$ . |
|---|---|
| **Q.31** | The slant height of the frustum of a cone is 4 *cm* and the circumferences of its circular ends are 18 *cm* and 6 *cm* . Find curved surface area of the frustum. |
| **Q.32** | If PAB is secant and PT is tangent to a circle then prove that $PA \times PB = PT^2$ . <br><br> OR <br> The radii of two concentric circles are 16cm and 10 cm . AB is a diameter of the bigger circle BD is <br><br><br><br> tangent to the smaller circle touching it at D .Find the length of AD . |
| **Q.33** | Find the area of the shaded region. . |
| **Q.34** | An aero plane at an altitude of 1200 meters finds that two ships are sailing towards it in the same direction. The angles of depression of the ships as observed from the aero plane are $60^o$ and $30^o$ respectively. Find the distance between the two ships. |
| | ******************_____********************** |
| | *"Hard working is only the investment that never fails "* |