



Year of quality education
TMC -D/79/89/36

Code No. **Series AG-7-1899**

General Instructions :

- All question are compulsory.
- 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.
- 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.
- 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 If the alternatives in all such questions.
- Use of calculator is not permitted.
- An additional 15 minutes time has been allotted to read this question paper only.

सामान्य निर्देश :

- सभी प्रश्न अनिवार्य हैं।
- इस प्रश्न पत्र में 34 प्रश्न हैं, जो चार खण्डों में अ, ब, स व द में विभाजित हैं। 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।
- प्रश्न संख्या 1 से 10 बहुविकल्पीय प्रश्न हैं। दिए गए चार विकल्पों में से एक सही विकल्प चुनें।
- 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।
- कैलकुलेटर का प्रयोग वर्जित है।
- इस प्रश्न-पत्र को पढ़ने के लिए 15 मिनट का समय दिया गया है। इस अवधि के दौरान छात्र केवल प्रश्न-पत्र को पढ़ेंगे और वे उत्तर-पुस्तिका पर कोई उत्तर नहीं लिखेंगे।

Pre-Board Examination 2010 - 11

Time : 3 to 3 1/2 Hours

अधिकतम समय : 3 से 3 1/2

Maximum Marks : 80

अधिकतम अंक : 80

Total No. Of Pages : 4

कुल पृष्ठों की संख्या : 4

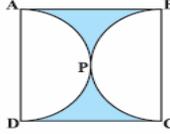
CLASS – X

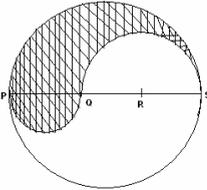
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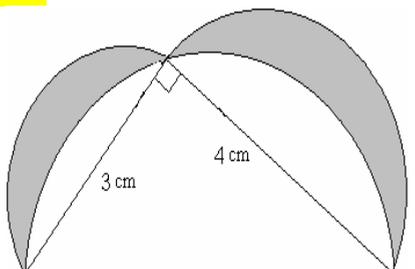
MATHEMATICS

Section A

Q.1	Which of the following equations has two distinct real roots ? (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) $5x^2 - 3x + 1 = 0$ Ans. b
Q.2	Sum of first n terms of a series is $5n^2 + 2n$, then its second term is (a) 15 (b) 16 (c) 17 (d) none of these Ans. c
Q.3	The probability that a card drawn from a pack of 52 cards will be a diamond or a king is (a) $\frac{2}{13}$ (b) $\frac{4}{13}$ (c) $\frac{1}{13}$ (d) $\frac{1}{52}$ Ans. B
Q.4	Two concentric circles are of radii 13cm and 5cm. The length of the chord of larger circle which touches the smaller circle is

	(a) 12cm (b) 20cm (c) 24cm (d) 26cm Ans c
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 (a) (3, 7/3) (b) (3, 3) (c) (4,3)(d) none of these (Ans. a)
Q.6	If for an A.P. $T_4+T_8=24$ and $T_6+T_{10}=34$, then first term = (a) $\frac{1}{2}$ (b) $\frac{3}{2}$ (c) $-\frac{1}{2}$ (d) $-\frac{3}{2}$ Ans c
Q.7	If one roots of the equation $px^2 - 14x + 8 = 0$ is six times the other, then p is equal to (a) 2 (b) 3 (c) 1 (d) none of these Ans. b
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. (a) 45° (b) 30° (c) 60° (d) NONE Ans : c
Q.9	 The area of the shaded region in Fig. , if ABCD is a square of side 14 cm and APD and BPC are semicircles. (a) $24cm^2$ (b) $42cm^2$ (c) $420cm^2$ (d) none of these Ans b
Q.10	TP and PQ are the two tangents to a circle with centre O, so that $\angle POQ = 100^\circ$, then $\angle PTQ$ is equal to (a) 60° (b) 70° (c) 80° (d) 90° Ans c
Section B	
Q.11	A square is inscribed in a circle. What is the ratio of the areas of the circle and the square. . {Ans. $\pi : 2$}
Q.12	Write the nature of roots of the quadratic equation $\sqrt{5}x^2 - 3\sqrt{6}x - \sqrt{20} = 0$. Ans D = 94 ; Real , unequal , irrational
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. Ans Area = $lr / 2 = 15.6$ sq cm OR The diameter of a circle is 84 cm. find the number of revolutions it will make in moving 792 meters. . Ans :- 300
Q.14	A jar contains 54 marbles each of which is blue , green or white . The probability of selecting a blue marbles at random from the jar is $1 / 3$, and the probability of selecting a green marble at random is $4 / 9$. How many white marble does the jar contain ? Ans:- White marble = 12
Q.15	The distance between A (x,7) and B (1,3) is 5. calculate x. Ans x = 4 or - 2
Q.16	The encircle of ΔABC touches the side AB , BC & CA at P,Q &R respectively. Show that $AP + BQ + CR = \frac{1}{2}$ (perimeter of ΔABC) .
Q.17	Rao started work in 1995 at an annual salary of ₹ 5000 and recived an increment of ₹ 200 each year . In which year did his income reach ₹ 7000 . Ans:- 5000, 5200, , 5400,{ $5000 + (n - 1) 200 = 7000 : n = 11$. in the year 2005 his annual salary will reach to Rs 7000 .
Q.18	If the coordinates of the middle point of the line segment joining the point (2 , 1)(1,-3) be (α, β) , 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

	<p>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. Ans (i) 1/2 (ii) 3/25 (iii) 9/100 (iv) 2/25</p> <p style="text-align: center;">OR</p> <p>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 ? Ans (i) 1/5 (ii) 8/25 (iii) 4/5</p>
Q.20	<p>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 $\pi = 3.14$)</p>  <p style="text-align: center;">Ans (perimeter = 37 . 68 cm Area = 37.68cm²)</p>
Q.21	<p>Find the number of terms in the series $20, 19\frac{1}{3}, 18\frac{2}{3}, \dots$ of which the sum is 300, explain the double answer. Ans n = 25 , 36 . Explanation : Sum of 25 term is equal to sum of 36 term of an AP. Because sum of last 11 term out of 36 term is zero.</p>
Q.22	<p>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° and 60° respectively. Find the width of the river and the height of the other pole. Ans:- height of other pole = 40 m & width of river = $20\sqrt{3} = 34.64$</p>
Q.23	<p>The rain water from a roof $22\text{m} \times 20\text{m}$ 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. 2.5cm</p> <p style="text-align: center;">OR</p> <p>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 ? Ans:- Time = 512/10 minutes or 51 minutes 12 second</p>
Q.24	<p>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 . Ans p = -10/3</p>
Q.25	<p>Prove that, the opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the center of the circle.</p>
Q.26	<p>Draw a circle of 3.4 cm radius. Take a point P outside the circle. Draw two tangents to the circle from the point P without using the center .</p>
Q.27	<p>A hemispherical bowl of internal diameter 36 cm contains a liquid. This liquid is to be filled in cylindrical bottles of radius 3 cm and height 6 cm. How many bottles are required to empty the bowl? Ans 72 bottles</p>
Q.28	<p>If the points $A(1,-2), B(2,3), C(a,2)$ and $D(-4,-3)$ form a parallelogram, find the value of a and height of the parallelogram taking AB as base. Ans a = -3 Area of //gm = 24sq.unit & Altitude to base AB</p> <p style="text-align: center;">$= \sqrt{26} \times H = 24 \Rightarrow H = \frac{24}{\sqrt{26}}$</p> <p style="text-align: center;">OR</p> <p>The co-ordinates of the vertices of ΔABC are $A(4,1), B(-3,2)$ and $C(0, k)$. Given that the area of ABC is 12unit^2, find the value of k. Ans k = 5, -13/7</p>

Section D	
Q.29	<p>The denominator of a fraction is 1 more than twice the numerator. The sum of the fraction and its reciprocal is $2\frac{16}{21}$. Find the fraction. Ans $x = 3$ and fraction = $\frac{3}{7}; \frac{x}{2x+1} + \frac{2x+1}{x} = 2\frac{16}{25}$</p> <p style="text-align: center;">OR</p> <p>Some students planned a picnic. The budget for food was ₹ 500. But 5 of these failed to go and thus the cost of food for each student increased by ₹ 5. How many students attended the picnic. Ans number of student attend the picnic = 20; $\frac{500}{x-5} - \frac{500}{x} = 5$</p>
Q.30	<p>The sum of the first, p, q, r terms of an A.P. are a, b, c respectively. Show that $\frac{a}{p}(q-r) + \frac{b}{q}(r-p) + \frac{c}{r}(p-q) = 0$.</p>
Q.31	<p>A solid metallic right circular cone 20 cm high and whose vertical angle is 60° is cut into two parts at the middle point of its height by a plane parallel to the base. If the frustum, so obtained, be drawn into a wire of diameter $\frac{1}{16}$ cm, find the length of the wire. Ans 7964.44</p>
Q.32	<p>If PAB is secant and PT is tangent to a circle then prove that $PA \times PB = PT^2$.</p> <p style="text-align: center;">OR</p> <p>The radii of two concentric circles are 16cm and 10 cm. AB is a diameter of the bigger circle touching it at D. Find the length of AD. Length of AD = $\sqrt{456} = 2\sqrt{114}$cm</p>
Q.33	<p>Find the area of the shaded region. ans: Area of the design =</p> <p>$D_1 = 5\text{cm}; A_1 = \frac{25\pi}{8}; D_2 = 4\text{cm}; A_2 = 2\pi$ & $D_3 = 3\text{cm}; A_3 = \frac{9\pi}{8} \therefore A(\Delta ABC) = 6\text{unit}^2$</p> <div style="display: flex; align-items: center; justify-content: center;"> <div style="flex: 1;"> $A = \left(\frac{9\pi}{8} + 2\pi + 6 \right) - \frac{25\pi}{8} = \frac{886}{56} - \frac{550}{56} = 6\text{unit}^2$ </div> <div style="flex: 1;">  </div> </div>
Q.34	<p>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° and 30° respectively. Find the distance between the two ships. Distance between two ships = $800\sqrt{3} = 1385.6\text{m}$</p>
