



Code No. **Series AG-6-3689**

General Instructions :

1. All questions are compulsory.
2. The question paper consists of 34 questions divided into four sections A, B, C and D. Section – A comprises of 10 questions 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 of 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 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 अंकों का है। खण्ड – स में 10 प्रश्न हैं और प्रत्येक प्रश्न 3 अंकों का है। खण्ड – द में 6 प्रश्न हैं और प्रत्येक प्रश्न 4 अंकों 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 अंकों में, 3 प्रश्न 3 अंकों में और 2 प्रश्न 4 अंकों 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 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

Maximum Marks : 80

अधिकतम समय : 3 से 3 1/2

अधिकतम अंक : 80

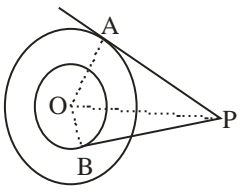
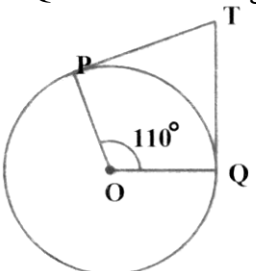
Total No. Of Pages : 14

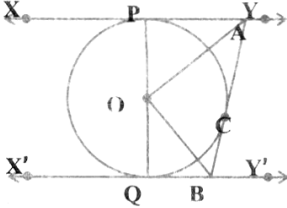
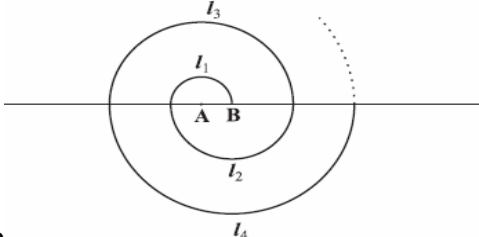
कुल पृष्ठों की संख्या : 14

CLASS – X MATHEMATICS

Section A

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|------------|--|
| Q.1 | A tree breaks due to storm and broken part bends so that the top of the tree touches the ground making an angle of 30° with ground. If the distance between the foot of the tree to the point where the top touches the ground is 8m, then the height of the tree is
(a) $\frac{8}{3}$ (b) $\frac{3}{8}$ (c) $\frac{8}{\sqrt{3}}$ (d) $8\sqrt{3}$ Ans d |
| Q.2 | For an A.P. if $T_{25} - T_{18} = 45$, then d =
(a) 9 (b) -9 (c) 18 (d) 23 Ans a |
| Q.3 | If A and B are two points having coordinates (3, 4) and (5, - 2) respectively and P is a point such that $PA = PB$ and area of triangle $PAB = 10$ square unit, then the coordinates of P are
(a) (7,2) or (1,0) (b) (7,2) or (13,4) (c) (2,7) or (4,13) (d) none of these (Ans. a) |

<p>Q.4</p>	<p>In the given figure, two concentric circles with centre O are of radii 5 cm and 3 cm. From an external point P, tangents PA and PB are drawn to these circles. If AP = 12 cm, find BP.</p>  <p>(A) $4\sqrt{10}$ (B) $2\sqrt{10}$ (C) $\sqrt{10}$ (D) NONE ans: A</p>
<p>Q.5</p>	<p>If angle between two radii of a circle is 130°, then the angle between the tangents at the ends of the radii is</p> <p>(a) 90° (b) 50° (c) 70° (d) 40° . Ans b</p>
<p>Q.6</p>	<p>Two unbiased dice are thrown. The probability that the total score is > 5 is</p> <p>(a) $\frac{1}{18}$ (b) $\frac{7}{18}$ (c) $\frac{13}{18}$ (d) $\frac{11}{18}$. Ans c</p>
<p>Q.7</p>	<p>The curved surface area of a cylinder is 264 m^2 and its volume is 924 m^3. the ratio of its diameter to its height is</p> <p>(a) 3:7 (b) 7:3 (c) 6:7 (d) 7:6 . Ans b</p>
<p>Q.8</p>	<p>If (3,2), (6,3), (x,y) and (6,5) are the vertices of a gm, then $x+y =$</p> <p>(a) 13 (b) 14 (c) 16 (d) 15 . Ans d</p>
<p>Q.9</p>	<p>For an A.P. 8, 10,12,, 126, the 10th term from the end is</p> <p>(a) 80 (b) 108 (c) 50 (d) 60 . Ans b</p>
<p>Q.10</p>	<p>In Fig., If TP and TQ are the two tangents to a circle with centre O so that $\angle POQ = 110^\circ$, then $\angle PTQ$</p>  <p>is equal to</p> <p>(A) 60° (B) 70° (C) 80° (D) 90° Ans.b</p>
<p>Section B</p>	
<p>Q.11</p>	<p>Find the sum of all three digit numbers which leaves the remainder 2, when divided by 3. Ans : s = 164850</p> <p style="text-align: center;">OR</p> <p>Which term of A.P. 5,15,25 Will be 130 more than its 31st term? Ans n = 44</p>
<p>Q.12</p>	<p>Find the area of the sector of a circle with radius 4 cm and of angle 30°. also find the area of the corresponding major sector. . Ans 46.1 cm</p>
<p>Q.13</p>	<p>Determine the ratio in which the line $2x+y-4=0$ divides the line segment joining A(2,-2) and B(3,7). . Ans 2:9</p>
<p>Q.14</p>	<p>A letter of English alphabets is chosen at random. Determine the probability that the latter is a consonant. . Ans 21/26</p>

<p>Q.15</p>	<p>Find the perimeter of quadrant of a circle whose circumference is 22 cm. Ans $p = \frac{\pi r}{2} + 2r = 12.5$</p>
<p>Q.16</p>	<p>Find the relation between x and y if the points (x,y) , (1,2) and (7,0) are collinear.</p>
<p>Q.17</p>	<p>Solve for x: $a^2b^2x^2 + b^2x - a^2x - 1 = 0$ Ans $\left\{ \frac{-1}{a^2}, \frac{1}{b^2} \right\}$</p>
<p>Q.18</p>	<p>1000 tickets of a lottery were sold and there are 5 prizes on these tickets. If Saket has purchased one lottery ticket, What is the probability of winning a prize ? Ans 0.005</p>
<p>Section C</p>	
<p>Q.19</p>	<p>Let ABC be a right triangle in which AB = 3CM ; BC = 4 CM and $\angle B = 90^\circ$. BD is perpendicular from B on AC . The circle through B , C , D is drawn . construct the tangent from A to this circle .</p>
<p>Q.20</p>	<p>Find the probability of getting 53 Sunday and Monday in a leap year. Ans 3 / 7</p>
<p>Q.21</p>	<p>An aero plane flying horizontally at a height of 2500 m above the ground is observed at an elevation of 60° . If after 15 seconds, the angle of elevation is observed to be 30° , find the speed of the aero plane in km per hr. Ans 692.8km / hr</p>
<p>Q.22</p>	<p>In Fig., XY and X'Y' are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersecting XY at A and X'Y' at B. Prove that $\angle AOB = 90^\circ$.</p> 
<p>Q.23</p>	<p>In an A.P., the first term is 2 and the sum of the first five terms is one-fourth of the next five terms. Show that 20th term is -112. Ans : $S_5 = \frac{1}{4}[t_6 + t_7 + t_8 + t_9 + t_{10}] \Rightarrow d = -6$ & $T_{20} = a + 19d = -112$</p> <p style="text-align: center;">OR</p> <p>A spiral is made up of successive semi-circles, with centers alternately at A and B , starting with centre at A, of radii 0.5cm, 1.0cm, 1.5cm, 2.0 cm,....as shown in</p>  <p>Figure . What is the total length of such a spiral made up of thirteen consecutive semi-circles ? {Take $\pi = \frac{22}{7}$ } Ans :</p> <p>$l_1 = \pi r_1 = \frac{\pi}{2}; l_2 = \pi r_2 = 2\left(\frac{\pi}{2}\right); l_3 = \pi r_3 = 3\left(\frac{\pi}{2}\right); \dots \dots \dots l_1 + l_2 + l_3 + \dots + l_{13} = \frac{\pi}{2}(1 + 2 + 3 + \dots + 13) = 143 \text{ cm}$</p>
<p>Q.24</p>	<p>A bucket of height 8 cm and made up of copper sheet is in the form of frustum of a right circular cone with radii of its lower and upper ends as 3 cm and 9 cm respectively. Calculate: (a) the height of the cone of which the bucket is a part. (b) the volume of water which can be filled in the bucket.</p>

	(c) the area of copper sheet required to make the bucket. (Leave the answer in terms of) Ans (a) 12 cm (b) $312\alpha\pi m^3$ (c) $129\pi m^2$
Q.25	There are 1000 sealed envelopes in a box, 10 of them contain a cash price of ₹ 100 each, 100 of them contain a cash prize of ₹ 50 each and 200 of them contain a cash price of ₹ 10 each and rest do not contain any cash prize. If they are will shuffled and an envelope is picked up out, what is the probability that it contain no cash price? Ans 0.69
Q.26	Find the sum of all two digit numbers greater than 50 which when divided by 7 leaves a remainder of 4. Ans : $53 + 60 + 67 + \dots + 95 = 518$ (number of term = 7) OR A man repays a loan of Rs. 3250 by paying ₹ 20 in the first month and then increases the payment by ₹ 15 every month. How long will it take him to clear the loan? Ans : $20 + 35 + 50 + \dots$ nterm = 3250 then n = 20
Q.27	Prove that the diagonals of a rectangle bisect each other and are equal (Using coordinate geometry).
Q.28	The vertices of a PQR are P (4, 6), Q (1, 5) and R (7, 2). A line is drawn to intersect sides PQ and PR at S and T respectively, such that $\frac{PS}{PQ} = \frac{PT}{PR} = \frac{1}{4}$. Calculate the area of the PST and compare it with the area of PQR. Ans: S(13/4, 23/4) T(19/4, 20/4) & $A(\Delta PST) = \frac{15}{32}$ & $A(\Delta PQR) = \frac{15}{2}$; Raito = 1:16 OR The vertices of a triangle are (2,a), (1,b) and (c ² ,-3). (i) Prove that its centroid cannot lie on the y-axis. $\left(\frac{3+c^2}{3}, \frac{a+b-3}{3}\right) \& \frac{3+c^2}{3} = 0 \Rightarrow c^2 \neq -3$ (ii) Find the condition that the centroid may lie on the x-axis. $\left(\frac{3+c^2}{3}, \frac{a+b-3}{3}\right) \& \frac{a+b-3}{3} = 0 \Rightarrow a+b=3$
Section D	
Q.29	A two-digit number is such that product of its digits is 18. Where 63 is subtracted from the number, the digits interchange their places. Find the number. Ans 92
Q.30	How many terms of the A.P. - 6, - $\frac{11}{2}$, - 5, are needed to give the sum - 25 ? Explain double answer. Ans : $-25 = \frac{n}{2} \left[2 \times (-6) + (n-1) \frac{1}{2} \right] \Rightarrow n^2 - 25n + 100 = 0 \therefore n = 5, 20$ Explanation : - Sum of first 5 terms of an AP is same the sum of its 20 terms because the sum of last 15 terms is equal to zero
Q.31	A solid iron pole consists of a cylinder of height 110 cm and of base diameter 24 cm. which is surmounted by a cone 9 cm. high. Find the mass of the pole, given that 1 cm ³ of iron has 8 g mass. . Ans 102.24 OR The diameter of a roller 120 cm long is 84 cm. If it takes 500 complete revolutions to level a playground, determine the cost of leveling it at the rate of 30 paise per square metre. Ans 475.2 RS
Q.32	A boy standing on a horizontal plane finds a bird flying at a distance of 100m from him at an angle of elevation 30°. A girl standing on the roof of 10m high building finds the angle of elevation of the same bird, at the same time, to be 45°. Both the boy and the girl are on opposite sides of the bird. Find

	<p>the distance of bird from the girl. Ans $40\sqrt{2}m$</p> <p>OR</p> <p>The angle of elevation of a cloud from a point 60m above the lake is 30° and the angle of depression of the reflection of the cloud in the lake is 60°. Find the height of the cloud. Ans $120m$</p>
Q.33	<p>A sphere, of diameter 12 cm, is dropped in a right circular cylindrical vessel, partly filled with water. If the sphere is completely submerged in water, the water level in the cylindrical vessel rises by $3\frac{5}{9}cm$. Find the diameter of the cylindrical vessel. Ans $18cm$</p>
Q.34	<p>From a point P, two tangents PA and PB are drawn to a circle with centre O. If OP is equal to the diameter of the circle, prove that ΔPAB is equilateral.</p>
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