



Code No. **Series AG-4-0089**

Geral 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 If 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 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 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

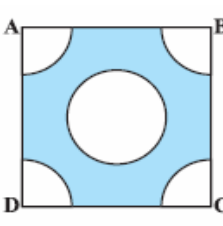
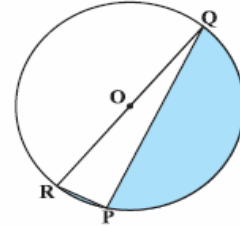
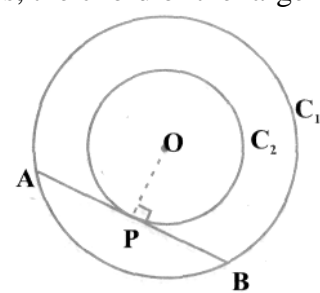
MATHEMATICS

Section A

Q.1	If the roots of equation $3x^2 + 2x + (p + 2)(p - 1) = 0$ are of opposite sign then which of the following can not be the value of p? (a) 0 (b) -1 (c) $\frac{1}{2}$ (d) -3 Ans. d
Q.2	If the third term of an AP is 12 and the seventh term is 24, then the 10 th term is (a) 34 (b) 35 (c) 36 (d) 33 Ans. d
Q.3	Two players ranvir and ranjit play table tennis. the probability of ranjit winning the match is 0.58. what is the probability of ranvir winning the match ?

	(a) 0.58 (b) 0.36 (c) 0.42 (d) 0.18	Ans. C
Q.4	Number of tangents to a circle which are parallel to a secant is (a) 1 (b) 2 (c) 3 (d) infinite	Ans b
Q.5	The difference between the circumference and the radius of a circle is 37 cm. The area of circle is (a) $149cm^2$ (b) $154cm^2$ (c) $121cm^2$ (d) $169cm^2$	Ans b
Q.6	The midpoint of the line joining the points $(2p+2, 3)$ and $(4, 2q+1)$ are $(2p, 2q)$. Find the values of p and q. (a) $p = 3$ & $q = 2$ (b) $p = 2$ & $q = 3$ (c) $p = -2$ & $q = 3$ (d) none of these	Ans (a)
Q.7	A card is drawn at random from a pack of cards. What is the probability that the drawn card is neither a heart nor a king (a) $\frac{4}{13}$ (b) $\frac{9}{13}$ (c) $\frac{1}{4}$ (d) $\frac{13}{26}$	Ans (b)
Q.8	The sum of the first 2n terms of the AP 2,5,8,... is equal to sum of the first n terms of the AP 57, 59, 61,..... then n equals (a) 10 (b) 11 (c) 12 (d) 13	Ans : b
Q.9	A tangent PQ at a point P of a circle of radius 7cm meets a line through centre O at a point Q so that $OQ = 25cm$ length PQ is (a) 20cm (b) 14cm (c) 24cm (d) 26cm	Ans c
Q.10	An aero plane is flying horizontally $1500\sqrt{3}$ m above the ground is observed at an angle 60° from a point on the ground. After 15 sec. of flight the angle of elevation is observed to be 30° . Find the speed of the aero plane in km / h . (a) 720 km/ h (b) 360 km / h (c) 7200 km / h (d) none of these	Ans. A
Section B		
Q.11	Find the coordinates of the point which is at a distance of 2 units from (5,4) and 10 units from (11,-2) .	Ans. (6 , 3)
Q.12	Solve the following quadratic equation: $(a+b)^2x^2 - (a+b)x - 6 = 0, (a+b \neq 0)$.	Ans $x = \frac{3}{a+b}, \frac{-2}{a+b}$
Q.13	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 levelling it at the rate of 30 paise per square meter. Ans. Total area in 500 revolution = 1584 sq m & total cost = 475 .20 OR The circumference of a circle exceeds its diameter by 16.8 cm. Find the radius of circle.	Ans. R = 3 . 92 cm
Q.14	In an equilateral triangle of side 24 cm , a circle is inscribed touching its sides . Find the area of remaining portion of the triangle.[use $\sqrt{3} = 1.732$] . Ans; Radius of circle $4\sqrt{3}cm$ Area of incircle = 150.85 sq cm & Area of triangle = 249.4 sq cm There fore Area of remaining portion of triangle = 98.55 sq cm	
	A jar contains 36 marbles, some are red and others are green. If a marble is drawn at random from the jar, the probability that it is red is $\frac{1}{3}$. Find the number of green marbles in the jar.	Ans. 24
Q.16	In what ratio does the point $(\frac{11}{6}, \frac{17}{6})$ divide the join of A (1, 2) and B(3, 4).	Ans.5 : 74
Q.17	The in circle of ΔABC touches the sides BC, CA and AB at D, E and F respectively. If $AB = AC$, prove that $BD = CD$.	
Q.18	The wheels of a car are of diameter 140cm each. How many complete revolution per minute must the wheel make in order to keep a speed of 66km/ hour ?	Ans.Number of revolution per minute 250

Section C

<p>Q.19</p> <p>Q.20</p> <p>Q.21</p> <p>Q.22</p> <p>Q.23</p> <p>Q.24</p> <p>Q.25</p> <p>Q.26</p> <p>Q.27</p> <p>Q.28</p>	<p>A bag contains 12 balls out of which x are white. (i) If one ball is drawn at random, what will be the probability that it will be a white ball?(ii) If 6 more white balls are put into the bag, the probability of drawing a white ball will double than that in (i) Find x . Ans.(i) $x / 12$ (ii) 3</p> <p>The sums of n terms of two AP's are in the ratio $7n + 1; 4n + 27$. show that the ratio of their 11^{th} terms is 4:3. Ans.148 / 111</p> <p>Draw a circle of radius 4 cm and construct a pair of tangent to the circle which are inclined to each other at Construct a 30° .</p> <p>The radius of the base and the height of solid right circular cylinder are in the ratio 2:3 and its volume is 1617cu. cm. find the total surface area of the cylinder. Ans 770 cm OR A cone of height 24cm and radius of base 6cm. is made up of modelling clay. A child reshapes it in the form of a sphere. Find the radius of the sphere. Ans r = 6cm</p> <p>From each corner of a square of side 4 cm a quadrant of a circle of radius 1 cm is cut and also a circle of diameter 2 cm is cut as shown in Fig.. Find the area of the remaining portion of the square.(Use $\pi = 3.14$)</p> <div style="display: flex; align-items: center;">   <div style="background-color: yellow; padding: 5px; margin-left: 20px;"> <p>Ans Area of design $(16 - 2\pi) = 9.72cm^2$</p> </div> </div> <p>OR Find the area of the shaded region in Fig., if $PQ = 24$ cm, $PR = 7$ cm and O is the centre of the circle. Ans (Area = $161.5cm^2$)</p> <p>Prove that in two concentric circles, the chord of the larger circle, which touches the smaller circle, is bisected at the point of contact.</p> <div style="text-align: center;">  </div> <p>Find the ratio in which the join of points (1, 3), (2, 7) is divided by the line $3x + y = 9$. Also find the point of division . Ans 3:4 & point (10/7 , 33 / 7)</p> <p>Prove using coordinate a line joining the middle points of a triangle is one half of its third side . OR Find the center of circle of circle passing through the vertices of triangle whose sides are $x + y = 2$; $3x - 4y - 6 = 0$, and $x - y = 0$. Ans Solve linear equation and point of intersection of triangle are (1 , 1) ; (2 , 0) & (-6 , -6) . Using PA = PB = PC .Center (-2 , -3)</p> <p>From a window 15 metres high above the ground in a street , the angles of elevation and depression of the top and foot of another house on the opposite side of the street are 30° and 45° respectively . show that the height of the opposite house is 23.66 metres . (take $\sqrt{3} = 1.732$)</p> <p>The radius of the in circle of a triangle is 2 cm and the segments into which one side is divided by the point of contact are 3 cm and 4 cm . Determine the other two sides of triangle . Ans sides are</p>
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6.5 cm & 7.5 cm

Section D

Q.29 If twice the area of a smaller square is subtracted from the area of a larger square, the result is 14 sq cm. However, if twice the area of the larger square is added to three times of area of the smaller square, the result is 203 sq cm. Determine the sides of the two squares. **Ans**

$$y^2 - 2x^2 = 14 \text{ \& } 2y^2 + 3x^2 = 203 \text{ sides } 5 \text{ and } 8 \text{ cm}$$

OR

Two pipes running together can fill a cistern in $3\frac{1}{13}$ minutes .if one pipe takes 3 minutes more than the other to fill the cistern ,find the time in which each pipe would fill the cistern . **Ans**

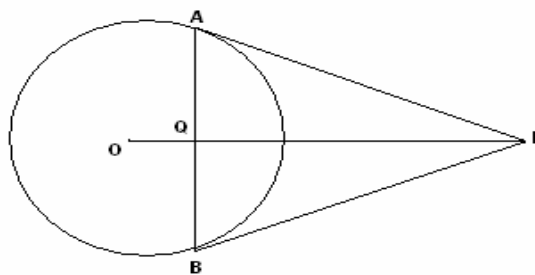
$$\frac{1}{x} + \frac{1}{x+3} = \frac{13}{40} \text{ slower pipe } 5 \text{ minutes and longer pipe } 8 \text{ minutes}$$

Q.30 A contract on construction job specifies a penalty for delay of completion beyond a certain date as follows: ₹ 200 for I day, ₹ .250 for II day, ₹ 300 for III day and so on., How much does a delay of 30 days cost the contractor . **Ans : a = 200 ; d = 50, n = 30 ; $S_n = \frac{30}{2} [2 \times 200 + 29 \times 50] = 27750$. Thus , a delay of 30 days will cost the contractor of Rs. 27750 .**

Q.31 The radii of circular ends of a solid frustum of a cone are 28cm and 7cm and its height is 7cm. Find capacity of the bucket . $\left(\pi = \frac{22}{7}\right)$ **Ans 48510 cm³**

Q.32 An agriculture field is in the form of a rectangle of length 20m width 14m. A 10m deep well of diameter 7m is dug in a corner of the field and the earth taken out of the well is spread evenly over the remaining part of the field. Find the rise in its level. **Ans $h = \frac{2 \times 385}{483} = \frac{770}{483} = 1.594 \text{ m}$**

Q.33 Prove that the lengths of tangents drawn from an external point to a circle are equal. Making use of the above, prove the following:
From an external point P, two tangents PA and PB are drawn to a circle with centre O as shown in figure. Show that OP is the perpendicular bisector of AB.



Q.34 From the top of a building 15m high, the angle of elevation of the top of a tower is found to be 30°. From the bottom of the same building, the angle of elevation of the top of the tower is found to be 60°. Determine the height of the tower and the distance between the tower and building. **$h = 22.5 \text{ \& } d = 12.99$**

OR

A vertical tower is surrounded by a flagstaff of height h meters. At a point on the ground, the angles

	of elevation of the bottom and top of the flagstaff are α & β respectively . Prove that the height of the tower is $\frac{h \tan \alpha}{\tan \beta - \tan \alpha}$ meters.
