



Code No. **Series AG-8-9999**

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

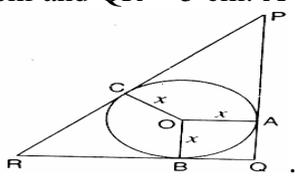
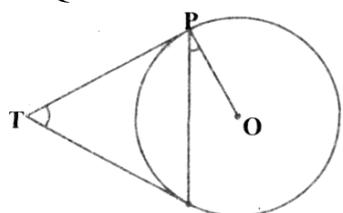
CLASS – X

CBSE

MATHEMATICS

Section A

Q.1	The value of k for which the equation $x^2 + 2(k+1)x + k^2 = 0$ has equal roots is (a) -1 (b) $-\frac{1}{2}$ (c) 1 (d) none of these	Ans. b
Q.2	In AP consist of 31 terms if its 16 th term is m, then sum of all the terms of this AP is (a) 16 m (b) 47 m (c) 31 m (d) 52 m	Ans. c
Q.3	Rahim and karim are friends. What is the probability that both have their birthdays on the same day in a non-leap year ? (a) $\frac{1}{365}$ (b) $\frac{1}{7}$ (c) $\frac{1}{53}$ (d) $\frac{7}{365}$	Ans. A

Q.4	A quadrilateral ABCD is drawn to circumscribe a circle. If AB = 12cm , BC= 15cm and CD= 14cm, then AD is equal to (a) 10cm (b) 11cm (c) 12cm (d) 14cm Ans b
Q.5	The circumferences of two concentric circles forming a ring are 88 cm and 66 cm respectively. The width of the ring is (a) 14 cm (b) 7 cm (c) 7/2 cm (d) 21 cm Ans c
Q.6	If two consecutive vertices of a rhombus are (2,-1), (3, 4) and intersection point of its diagonal are (0 , then the remaining two vertex are (a) (-3,-2) & (-2, 3) (b) (3,2) & (-2, 3)(c) (-3,-2) & (2,3)(d) (1, 2) & (-3,-2) (Ans. a)
Q.7	The difference between circumference and the radius of a circle is 37m. the circumference of that circle is (a) 7m (b) 44m (c) 154m (d) 77m Ans b
Q.8	Two tangents TP and TQ are drawn from an external point T to a circle with centre O .If they are inclined to each other at an angle of 100° then what is the value of $\angle POQ$? (a) 70 (b) 60 (c) 80 (d) none of these Ans c
Q.9	If α, β are the roots of the equation $x^2 + kx + 12 = 0$ such that $\alpha - \beta = 1$, the value of k is : (a) 0 (b) ± 5 (c) ± 1 (d) ± 7 {Ans.d
Q.10	If the height of a tower is half the height of the flagstaff on it and the angle of elevation of the top of the tower as seen from a point on the ground is 30° . Then the angle of elevation of the top of the flagstaff as seen from the same point is (a) 30° (b) 45° (c) 90° (d) 60° . Ans d
Section B	
Q.11	How many spherical bullets can be made out of a solid cube of lead whose edge measures 44 cm, each bullet being 4 cm in diameter. Ans 2541
Q.12	One root of the equation $2x^2 - 8x + m = 0$ is $5/2$. Find the other root and the value of m . Ans $m = \frac{15}{2}; \alpha = \frac{3}{2}$
Q.13	A pendulum swings through an angle of 30° and describes an arc 8.8 cm in length. Find the length of the pendulum. Ans l = 16 . 8 cm
Q.14	A bag contains 5 red balls and some white balls. If the probability of drawing a white ball is double that of red ball, find the number of white balls in the bag. Ans nu. Of white balls = 10
Q.15	The ordinate of a point is twice its abscissa. Find the coordinates of the point if its distance from (4,3) is $\sqrt{10}$. Ans (1,2) (3,6)
Q.16	In given figure PQR is a right angled triangle with PQ = 12 cm and QR = 5 cm. A circle with centre O and radius x is inscribed in ΔPQR . Find the value of x.  Ans r = 2 OR Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that $\angle PTQ = 2 \angle OPQ$. 

Q.17	Using quadratic formula, solve the following quadratic equation for x: $x^2 - 4ax + 4a^2 - b^2 = 0$ Ans $\{2a + b, 2a - b\}$
Q.18	Prove that the coordinates of the centroid of a ΔABC with vertices $A(x_1, y_1)$, $B(x_2, y_2)$ and $C(x_3, y_3)$ are given by $\left(\frac{x_1 + x_2 + x_3}{3}, \frac{y_1 + y_2 + y_3}{3}\right)$.
Section C	
Q.19	A letter is chosen at random from the English alphabet. Find the probability that the letter chosen (a) is a vowel, (b) is a consonant © precedes P (d) follower r. Ans. (a) 5/26 (b) 21/26 (c) 15/26 (d) 4/13
Q.20	Determine the common difference of the AP whose sum of m terms is $xm^2 + ym$. Ans. a = x + y & d = 2x OR Prove that sum of n term of A.P. is $S_n = \frac{n}{2}[2a + (n - 1)d]$.
Q.21	50 circular plates, each of radius 7 cm and thickness $\frac{1}{2}$ cm are placed one above another to form a solid right circular cylinder. Find the total surface area and the volume of the cylinder so formed. Ans. 1408 sq cm OR A hemispherical tank of radius $1\frac{3}{4}$ m is full of water. It is connected with a pipe which empties it at the rate of 7 litres per second. How much time will it take to empty the tank completely ? Ans. 1604.16 sec = 26.73 minutes
Q.22	A brooch is made with silver wire in the form of a circle with diameter 35 mm. The wire is also used in making 5 diameters which divide the circle into 10 equal sectors as shown in Fig.. Find : (i) the total length of the silver wire required. (ii) the area of each sector of the brooch. Ans (i) 285 mm (ii) Area = $\frac{385}{4} mm^2$ OR The area of an equilateral triangle is $1732.05 cm^2$. taking each vertex as centre; a circle is drawn with radius equal to half the length of the side of the triangle. Find the area of the triangle not included in the circles. (Take $\pi = 3.14$ & $\sqrt{3} = 1.73205$). Ans. r = 100 cm side of square = 200 cm & area = 1620.51 sq cm
Q.23	From the top of a lighthouse, the angles of depression of two ships on its two sides are observed to be α and β . If the height of the lighthouse is h meters and the line joining the ships passes through the foot of the lighthouse, show that the distance between the ships is $\frac{h(\tan \alpha + \tan \beta)}{\tan \alpha \tan \beta}$.
Q.24	Using A (4,-6), B(3,-2) and C(5,2), verify that a median of the triangle ABC divides it into two triangles of equal areas.
Q.25	PQ is a chord of length 8 cm of a circle of radius 5 cm. The tangent at P & Q intersect at a point T. Find the length of TP. Ans TP = 20/3 CM
Q.26	Which term of the sequences 114, 109, 104 is the first negative term ? Ans n = 24th term



Q.27	If centre of circle passing through (a,-8), (b,-9) and (2,1) is (2,-4), find the value of a and b. Ans a = 5, -1 b = 2
Q.28	Prove that the parallelogram circumscribing a circle is a rhombus.
Section D	
Q.29	<p>If the equation $(1+m^2)x^2 + 2mcx + (c^2 - a^2) = 0$ has equal roots, prove that $c^2 = a^2(1+m^2)$.</p> <p style="text-align: center;">OR</p> <p>Out of a number of Saras birds, one fourth the number are moving about in lotus plants ; 1/9 th coupled (along) with 1/4 as well as 7 times the square root of the number move on a hill; 56 birds remain in vakula trees. What is the total number of birds ? Ans Total number of birds = 576</p> $x - 18\sqrt{x} - 144 = 0$ $\frac{x}{4} + \frac{x}{9} + \frac{x}{4} + 7\sqrt{x} + 56 = x \quad \sqrt{x} = y \Rightarrow y^2 - 18y - 144 = 0$ $y = 24 \Rightarrow x = 576$
Q.30	If S_1, S_2, S_3 be the sum of n, 2n and 3n terms respectively of an A.P. prove that $S_3 = 3(S_2 - S_1)$.
Q.31	<p>A vessel is in the form of a hollow hemisphere mounted by a hollow cylinder. The diameter of the hemisphere is 14 cm and the total height of the vessel is 13 cm. Find its capacity .[Use $\pi = \frac{22}{7}$]. Ans</p> $: V = \frac{4928}{3} = 1642.66cm^3$
Q.32	Draw a triangle ABC with side BC = 7cm, $\angle B = 45^\circ$, $\angle A = 105^\circ$, then construct a triangle whose sides are $\frac{3}{5}$ times the corresponding side of $\triangle ABC$.
Q.33	A copper wire 4 mm in diameter is evenly bound about a cylinder whose length is 24 cm and diameter 20 cm so as to cover the whole surface. Find the length of the wire in terms of π . Ans :Length of wire = 1200π
Q.34	<p>A man standing on the deck of a ship, which is 10m above the water level, observes the angle of elevation of the top of a hill as 60° and the angle of depression of the base of the hill as 30°. Calculate the distance of the hill from the ship and the height of the hill. $d = 10\sqrt{3} = 17.32; h = 40m$</p> <p style="text-align: center;">OR</p> <p>The angle of elevation of a jet fighter from a point A on the ground is 60°. After a flight of 15seconds, the angle of elevation changes to 30°. If the jet is flying at a speed of 720 km/hour, find the constant height at which the jet is flying. $1500\sqrt{3}m = 2598$</p>
