19th Year of quality education

Code No. Series AG-9-3636 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 लिऐ 15 मिनिट का समय दिया गया है। इस अवधि के दौरान छात्र केवल प्रश्न–पत्र को पढेंगे और वे उत्तर–पुस्तिका पर कोई उत्तर नहीं लिखेंगें।

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

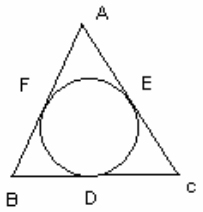
CLASS – X CBSE MATHEMATICS

Section A

Q.1 If $x^2 + 4ax + 3 = 0 and 2x^2 + 3ax - 9 = 0$ have a common root, then the value of 'a' is

(a) ± 3 (b) ± 1 (c) 1 only (d) ± 2 . Ans b

Q.2 A triangle ABC is drawn to circumscribe a circle. If AB = 13cm, BC= 14cm and AE = 7cm, then AC



is equal to

12 cm (b) 15m (c) 11cm (d) 16cm Ans b

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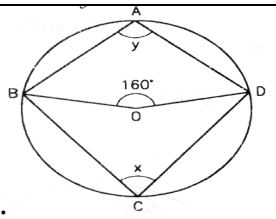
Q.3	A cylinder, a cone and a sphere are of equal base and have same height. What is the ratio of their volumes. (A) 1 : 2 : 3 (B) 2 :3 :1 (C) 3 : 1 : 2 (D) 3 : 1 : 4 Ans C
Q.4	If the sum of n, 2n and 3n terms of an A.P. are $s_1, s_2 and s_3$ respectively, then $\frac{s_3}{s_2 - s_1} =$ (a) 0 (b) 1 (c) 2 (d) 3 . Ans d
Q.5	The sum and product of the zeroes of a quadratic polynomial are $\frac{-1}{2}$ and - 3 respectively. Then what is the quadratic equation (A) $2x^2 + x - 6 = 0$ (B) $x^2 + x - 6 = 0$ (C) $x^2 + x - 6 = 0$ (D) NONE Ans a
Q.6	 In fig, O is the centre of the circle. If ∠BOD = 160°, find the values of x and y. (a) x = 100°, y = 80° (b) x = 80°, y = 100° (c) x = 70°, y = 110° (d) none ans: b
Q.7	A box contains 600 screws in which one tenth are rusted. One screw is taken out at random from this box. Find the probability that it is a good screw. (A) 1/10 (b) 9/10 (c) 1/60 (d) NONE Ans b
Q.8	A circle is inscribed in a triangle with sides 8, 15 and 17cm. The radius of the circle is (A)6cm (b) 5cm (c) 4cm (d) 3cm Ans d
Q.9	The angle of elevation of the top of a tower from a point on the ground which is 30m away from the foot of the tower is 30^0 .Find the height of the tower. (A) 17 (B) 17.32 (C) 17.23 (D) NONE Ans B
Q.10	The nature of roots of the quadratic equation : $4x^2-12x-9 = 0$ (a) Real and equal (b) Real and unequal (c) not real (d) none Ans b
	Section B
Q.11	Two A. P.'s have the same common difference. The difference between their 100^{th} terms is 100. what is the difference between their 1000^{th} terms? Ans 100
Q.12	An umbrella has 8 ribs which are equally spaced. Assuming umbrella to be flat circle of radius 60 cm, find the area between the two consecutive ribs of the umbrella. Ans $1414.28 cm^2, 45^0$
Q.13	Determine the value of K, so that the points (2,3), (K, 6) and (3, 2) are collinear. Ans $k = -1$
Q.14	998 tickets of a lottery were sold and there are 8 prizes on these tickets. If Sahil has purchased one ticket, what is the probability of winning a prize ?Ans 4/499
Q.15	Prove that the tangents drawn at the ends of a diameter of a circle are parallel. **OR**

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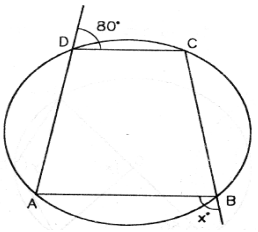
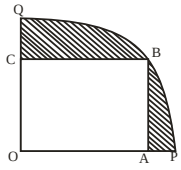
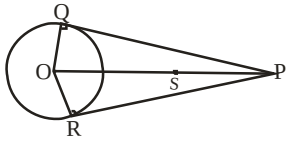
	In fig., ABCD is a cyclic quadrilateral. Find the value of x. Ans 100^0 
Q.16	The sum of the squares of two positive integers is 208. If the square of the larger number is 18 times the smaller, find the numbers. Ans $\begin{matrix} l\arg er = x = 12 \\ smaller = y = 8 \end{matrix}$
Q.17	If the coordinates of the mid-points of the sides of a triangle are (1,2),(0,–1) and (2, –1). Find the coordinates of its vertices. Ans $(3,2),(-1,2),(1,4)$
Q.18	A square OABC is inscribed in a quadrant OPBQ of a circle. If OA=20 cm,find the area of the shaded region. (Use π = 3 .14)  Ans $228cm^2$
	Section C
Q.19	Two circle with centers o and O' of radii 3cm and 4cm. respectively intersect at two points P and Q such that OP and O'P are tangents to the two circles. Find the length of the common chord PQ. Ans 4.8cm OR In the given figure, two tangents PQ and PR are drawn from an external point P to a circle with centre O. Radius of circle is 5 cm and PQ = 12 cm. Find PS if OS = PS . Ans OP = 13 CM, PS = 6.5 CM 
Q.20	Draw a triangle ABC with side BC = 6 cm, ∠B = 30°, ∠A = 120°. Then construct a triangle whose sides are $\frac{4}{3}$ times the corresponding sides of ΔABC.
Q.21	Find the sum of all multiple of 9 lying between 300 and 700. Ans $sum = 21978, n = 44$ **OR** A sum of ₹ 700 is to be used to give seven cash prizes to students of a school for their overall academic performance. If each prize is ₹ 20 less than its preceding prize, find the value of each of the prizes.Ans $a = 160^0$
Q.22	Find the value of 'a' such that the quadratic equation (a – 12) x^2 + 2 (a –12) x + 2 = 0 has equal roots. Ans $a = 12,14$

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Q.23	The perimeters of the ends of the frustum of a cone are 48 cm and 36 cm. if the height of the frustum be 11cm, find its volume . Ans :$1554cm^3$ OR A sphere of diameter 6 cm is dropped in a right circular cylindrical vessel partly filled with water. The diameter of the cylindrical vessel is 12 cm. If the sphere is completely submerged in water, by how much will the level of water rise in the cylindrical vessel? Ans: Water level raised by 1 cm
Q.24	Coordinates of the vertices of ΔABC are A (– 4, –2), B (–3, 5) and C (K, –2). Find the positive integral value of K if area of triangle is 15 sq. units. ANS : $k=\frac{58}{7},\frac{2}{7}$
Q.25	From the top of a building 12m high, the angle of elevation of the top of a tower is found to be 30^0. From the bottom of the same building, the angle of elevation of the top of the tower is found to be 60^0. Determine the height of the tower and the distance between the tower and building. Ans $h=18m, Dis\tan ce=10.4cm$
Q.26	Find the coordinates of the circum centre of the triangle whose vertices are P(5, 1), Q (–3, –7) and R (7, –1). Also find the area of circle.Ans (2,-4) $A=\pi r^2=106.8units^2$
Q.27	Cards marked with numbers 5 to 101 are placed in a box and mixed thoroughly. One card is drawn at random from this box. Find the probability that the number on the card is (i) a number which is a perfect square (ii) a prime number less than 30.Ans $8/97,8/97$
Q.28	A wire 112 cm long is bent to form a right angled triangle. If the hypotenuse is 50 cm, find the other two sides. Ans $x=14, y=48 \rightarrow or \rightarrow x=18, y=14$
	Section D
Q.29	A solid is composed of a cylinder with hemispherical ends. If the length of the whole solid is 108 cm. and the diameter of the cylinder is 36cm, find the cost of polishing the surface at the rate of 7paise per cm^2. [Use π = 22/7] Ans: TSA= 12219.42 SQ CM & Cost of polishing = Rs. 855.36 OR The cost of painting the total outside surface of a closed cylindrical oil tank at 60 paise per sq. dm is ₹ 237.60. The height of the tank is 6 times the radius of the base of the tank. Find its volume correct to two decimal places. Ans: TSA = $14\pi r^2$ Cost of painting = $\frac{42\pi r^2}{5}$ it is given that $\frac{42\pi r^2}{5}=237.60 \Rightarrow r=3dm; h=18dm \& V=509.14dm^3$
Q.30	A man rowing a boat away from a light house 150 m high, takes 2 minutes to change the angle of elevation of the top of light house from 45° to 30°. Find the speed of the boat.Ans: 54.9 m/min, 0.915m/sec
Q.31	A triangle ABC is drawn to circumscribe a circle of radius 4 cm such that the segments BD and DC into which BC is divided by the point of contact D are of lengths 8 cm and 6 cm respectively (see

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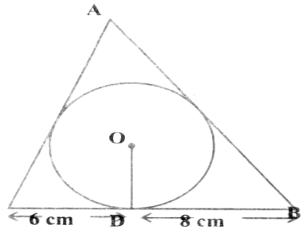
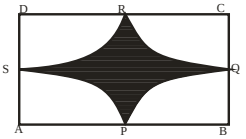
	Fig.). Find the sides AB and AC.  Ans $AB = 13cm, AC = 15cm$
Q.32	If the mth term of an A.P. is $\frac{1}{n}$ and the nth term is $\frac{1}{m}$, show that the sum of mn terms $\frac{1}{2}$ is (mn + 1). OR If the sum of n terms of an A.P. is $3n^2 + 5n$ and its mth term is 164, find the value of m. Ans : $a = 8; d = 6; T_m = 164 \Rightarrow m = 27$
Q.33	In the given figure, ABCD is a square. Points A, B, C and D are centres of quadrants of circles of the same radius. If the area of the area of the shaded portion is $21\frac{3}{7}\,cm^2$, find the radius of the quadrants. Ans r = 5cm 
Q.34	A motor boat takes 2 hours more to cover a distance of 30 km upstream than it takes to cover the same distance downstream. If the speed of the stream is 2km/hr, find the speed of the boat in still water. Ans $\frac{30}{x-2} - \frac{30}{x+2} = 2$ $8km/hour$
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