



CODE:- AG-TS-2-8199

पजियन क्रमांक

REGNO:-TMC -D/79/89/36

GENERAL INSTRUCTIONS :

- All questions are compulsory.
- The question paper consists of 34 questions divided into four sections A,B,C and D. Section – A comprises of 8 question of 1 mark each. Section – B comprises of 6 questions of 2 marks each. Section – C comprises of 10 questions of 3 marks each and Section – D comprises of 10 questions of 4 marks each.
- Question numbers 1 to 8 in Sections – 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 mark each. You have to attempt only one If the alternatives in all such questions.
- Use of calculator is not permitted.

सामान्य निर्देश :

- सभी प्रश्न अनिवार्य हैं।
- इस प्रश्न पत्र में 34 प्रश्न हैं, जो चार खण्डों में अ, ब, स व द में विभाजित है। खण्ड – अ में 8 प्रश्न हैं और प्रत्येक प्रश्न 1 अंक का है। खण्ड – ब में 6 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 10 प्रश्न हैं और प्रत्येक प्रश्न 4 अंको का है।
- प्रश्न संख्या 1 से 8 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 2012 -13

MATHEMATICS

CLASS X

(SA- 2)

Time : 3 to 3 1/4 Hours

अधिकतम समय : 3 से 3 1/4

Maximum Marks : 90

अधिकतम अंक : 90

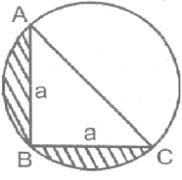
Total No. Of Pages : 4

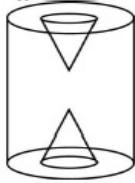
कुल पृष्ठों की संख्या : 4

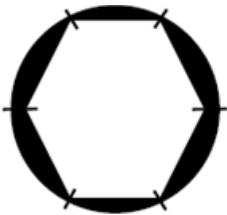
COORDINATE GEOMETRY, AREA RELATED TO CIRCLE, SURFACE AREA AND VOLUME

SECTION A

Q.1	
	<p>The area of the shaded portion in the given figure is :</p> <p>(A) 7.5π sq. units (B) 6.5π sq. units (C) 5.5π sq. units (D) 4.5π sq. units</p>
Q.2	<p>A solid metallic object is shaped like a double cone as shown in figure. Radius of base of both cones is same but their heights are different. If this cone is immersed in water, the quantity of water it will displace is equal to:</p> <div style="text-align: center;"> </div> <p>(A) $\frac{1}{3} \pi r^2 hH$ unit³ (B) $\frac{1}{3} \pi r^2 (h+H)$ unit³ (C) $\frac{1}{3} \pi r^2 (H-h)$ unit³ (D)</p>

	$\pi^2 \left(H + \frac{h}{3} \right) \text{ unit}^3$
Q.3	If P and Q are two points where coordinates are $(at^2, 2at)$ and $\left(\frac{a}{t^2}, \frac{2a}{t} \right)$ respectively and S is the point (a,0), then $\frac{1}{SP} + \frac{1}{SQ}$ equals to: (A) $\frac{1}{a}$ (B) $\frac{1}{a^2}$ (C) $\frac{t^2}{(t^2+1)}$ (D) $\frac{1}{t^2}$
Q.4	How many solid coins of radius 2cm and height 1cm can be made from a solid sphere of lead of radius 3cm by melting? (A)9 (B) 36 (C) 27 (D) 108
Q.5	AOBC is a rectangle whose three vertices are vertices A (0,3), O(0,0) and B (5,0).The length of its diagonal is (a) 5 (b) 3 (c) $\sqrt{34}$ (d) 4
Q.6	If BC passed through the centre of the circle, then the area of the shaded region in the given figure  is (A) $\frac{a^2}{2}(3-\pi)$ (B) $a^2\left(\frac{\pi}{2}-1\right)$ (C) $2a^2(\pi-1)$ (D) $\frac{a^2}{2}\left(\frac{\pi}{2}-1\right)$
Q.7	The height of a cone is 60cm. A small cone is cut off at the top by a plane parallel to the base and its volume $\frac{1}{64}$ the volume of original cone. The height from the base at which the section is made is: (A)15cm (B)30cm (C)45cm (D) $7\sqrt{2}$ m
Q.8	The area of the quadrilateral, the coordinates of whose vertices are (1, -2), (6, 2), (5, 3) and (3, 4) are (A) $\frac{9}{2}$ (B) 5 (C) $\frac{11}{2}$ (D) 11
SECTION B	
Q.9	A square is inscribed in a circle. What is the ratio of the areas of the circle and the square. .
Q.10	Find the value of a when the distance between the points (3, a) and (4, 1) is $\sqrt{10}$.
Q.11	Two cubes each of volume $125 m^3$ are joined end to end, find the surface area of the resulting cuboid.
Q.12	If V is the volume of a cuboid of dimensions a, b, c and S is its surface area, then prove that : $\frac{1}{V} = \frac{2}{S} \left(\frac{1}{a} + \frac{1}{b} + \frac{1}{c} \right)$. <p style="text-align: center;">OR</p> The sum of length, breadth and depth of a cuboid is 19 cm and the length of its diagonal is 11 cm. Find the surface area of the cuboid.
Q.13	If two vertices of a parallelogram are (3,2) and (- 1,0) and the diagonals intersect at (2,- 5) then find the other two vertices.
Q.14	Find the distance between the points P $\left(\frac{\sin \theta}{2}, 0 \right)$ and Q $\left(0, \frac{\cos \theta}{2} \right)$.
SECTION C	
Q.15	The wheels of a car are of diameter 80 cm each. How many complete revolutions does each wheel make in 10 minutes when the car is traveling at a speed of 66 km per hour?
Q.16	Twenty cylindrical pillars of the Parliament House are to be cleaned. If the diameter of each pillar is 0.50 m and height is 4m, what will be the cost of cleaning them at the rate of Rs.2.50 per square metre ?
Q.17	Two dice (one blue and one grey) are thrown at the same time. Write down all the possible outcomes. What is the probability that the sum of two numbers appearing on the top of dice is. (a)8 (b)13 (c)less than or equal to 12

Q.18	The radius and height of a cone are in the ratio 3 : 4. If its volume is 301.44 cm^3 , what is its radius ? What is its slant height?
Q.19	A sphere of diameter 6cm is dropped in a right circular cylindrical vessel partly filled with water. The diameter of the cylindrical vessel is 12cm. if the sphere is exactly half submerged in water, by how much will the level of water rise in the cylindrical vessel. OR A rectangular sheet of paper of dimensions $44\text{cm} \times 18\text{cm}$ is rolled along its length and a cylinder is formed. Find the volume of the cylinder so formed (use $\pi = \frac{22}{7}$)
Q.20	The segment AB is divided into 4 equal parts. C is nearer to A and E is nearer to B. Find the co-ordinates of A and B, if the co-ordinates of C, D and F are $(\frac{5}{2}, -\frac{1}{2})$, $(3, 0)$ and $(\frac{7}{2}, \frac{1}{2})$ respectively. OR The base BC of an equilateral triangle ABC lies y-axis .the co-ordinates of the points c are $(0, -3)$ if the origin is the mid- point of the base B, find the co-ordinate of the points A and B and hence find the area of the ΔABC .
Q.21	The measure of the minor arc of a circle is $\frac{1}{5}$ of the measure of the corresponding major arc. If the radius of the circle is 10.5 cm, find the area of the sector corresponding to the major arc. Take $(\pi = \frac{22}{7})$.
Q.22	The curved surface area of a cone is 4070 cm^2 and its diameter is 70 cm. What is its slant height ? (use $\pi = \frac{22}{7}$)
Q.23	Determine the ratio in which the points $(6, a)$ divides the join of $A(-3, -1)$ and $B(-8, 9)$. Also find the value of a.
Q.24	In given figure, the height of a solid cylinder is 15cm and diameter of the base is 7cm. two equal conical holes each of radius 3cm and height 4cm are cut off as shown in the  figure. Find the surface area of the remaining solid OR The sum of the radius of the base and height of a solid right circular cylinder is 37cm. if the total surface area of the solid cylinder is 1628cm^2 , find the volume of the cylinder. (Use $\pi = \frac{22}{7}$)
SECTION D	
Q.25	A field is in the form of a circle. A fence is to be erected around the field. The cost of fencing would be Rs. 2640 at the rate of Rs. 12 per metre. Then the field is to be thoroughly ploughed at the cost of Rs. 0.50 per m^2 . What is the amount required to plough the field ?
Q.26	Water is flowing at the rate of 3 km/hr through a circular pipe of diameter 20 cm. into a cylindrical container of diameter 10 m and depth 2 m. In how much time the container will be filled? OR A decorative block is made of two solids – a cube and a hemisphere. The Base of the block is the cube with edge of 7cm and the hemisphere attached on the top has a diameter of 4.9 cm. if the block is to be painted, find the total area to be painted.
Q.27	A right triangle whose side are 15cm and 20cm is made to revolve about its hypogenous. Find the volume and the surface area of the double cone so formed. (Use $\pi = 3.14$)

Q.28	Find the coordinates of the center of a circle which passes through the point A(1, 2), B(3, -4) and C(5, -6). Also, find the radius of the circle.
Q.29	The cost of painting the total outer surface of a closed cylindrical oil tank at 60 paise per sq. is Rs. 237.60 the height of the tank is 6 times the radius of the base of the tank. find height and radius of the tank
Q.30	With the vertices A, B and C of a triangle ABC as centres, arcs are drawn with radii 5 cm each as shown in Fig. 11.15. If AB = 14 cm, BC = 48 cm and CA = 50 cm, then find the area of the shaded region. (Use $\pi = 3.14$).
Q.31	A round table cover has six equal designs as shown in fig. 7. If the radius of the cover is 28cm. find the cost of making the designs at the rate of Rs. 0.35 per sq. cm  <p style="text-align: right;">Fig. 7</p>
Q.32	A semicircular thin sheet of metal of diameter 28cm is bent and an open conical cup is made. Find the capacity of the cup.
Q.33	The Points A(2, 9), B(a, 5), C(5, 5) are the vertices of a triangle ABC right angled at B. Find the value of 'a' and hence the area of ΔABC . OR The co-ordinates of two points A and B are (3 , 4) and (5, -2) respectively. Find the coordinates of any point P if PA = PB and $A(\Delta PAB) = 10$.
Q.34	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 ? _____x_____
<u>UNLESS YOU BELIEVE, YOU WILL NOT UNDERSTAND.</u>	