TARGET MATHEMATICS
THE EXCELLENCE KEY
AGYAT GUPTA (M.Sc., M.Phil.)

CODE:1701- AG-TS-4-SA-2 REG.NO:-TMC -D/79/89/36/63

GENERAL INSTRUCTIONS :

1. All questions are compulsory.
2. The question paper consists of 31 questions divided into four sections A,B,C and D. Section – A comprises of 4 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 11 questions of 4 marks each.
3. Use of calculator is not permitted.

सामान्य निर्देश :

1. सभी प्रश्न अनिवार्य हैं।
2. इस प्रश्न पत्र में 31 प्रश्न है, जो 4 खण्डों में अ, ब, स व द है। खण्ड – अ में 4 प्रश्न हैं और प्रत्येक प्रश्न 1 अंक का है। खण्ड – ब में 6 प्रश्न हैं और प्रत्येक प्र न 2 अंको के हैं। खण्ड – स में 10 प्रश्न हैं और प्रत्येक प्रश्न 3 अंको का है। हैं। खण्ड – द में 11 प्र न हैं और प्रत्येक प्रश्न 4 अंको का है।
3. कैलकुलेटर का प्रयोग वर्जित हैं ।
4. कृपया जाँच कर लें कि इस प्रश्न–पत्र में मुद्रित पृष्ठ 4 हैं।
5. प्रश्न–पत्र में दाहिने हाथ की ओर दिए गए कोड नम्बर को छात्र उत्तर–पुस्तिका के मुख–पृष्ठ पर लिखें।

MATHEMATICS CLASS X (SA- 2)

Time : 3 to $3\frac{1}{4}$ Hours Maximum Marks : 90

PRE-BOARD EXAMINATION 2015-16

SECTION A

Q.1 Find the tenth term of the sequence $\sqrt{2}, \sqrt{8}, \sqrt{18}, \ldots\ldots\ldots$

Q.2 Find a relation between x and y such that the point P(x, y) is equidistant from the points A (- 5, 3) and B (7, 2).

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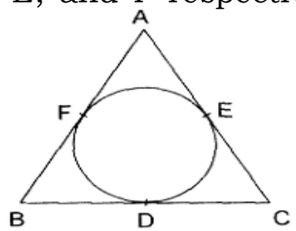
Q.3 In Fig. 3 the in-circle of ΔABC touches the sides BC, CA and AB at D, E, and F respectively. If AB = AC, prove that BD = CD.

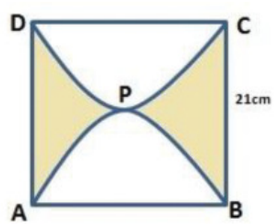


Q.4 A number x is selected from the number 1,2,3 and then a second number y is selected from the number 1,4,9 what is the probability that the product x y of the two numbers will be less than 9?

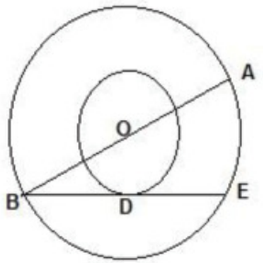
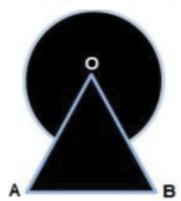
SECTION B

Q.5 In an A.P., the sum of first n terms is $\frac{3n^2}{2}+\frac{13n}{2}$. Find the 25th term.

Q.6 Find the perimeter of the shaded region if ABCD is a square of side 21 cm and APB and CPD are semicircles. (Use $\pi = 22/7$)



Q.7 A steel wire when bent in the form of a square encloses an area of 121 sq. cm If the same wire is bent into the form of a circle, find the area of the circle. Take $\left(\pi = \frac{22}{7}\right)$

Q.8	 In the given figure , the radii of two concentric circles are 13 cm and 8 cm. AB is diameter of the bigger circle. BD is the tangent to the smaller circle touching it at D. Find the length AB.
Q.9	Find the area of shaded region shown in the given figure where a circular arc of radius 6 cm has been drawn with vertex O of an equilateral triangle OAB of side 12 cm as centre. 
Q.10	Four cows are tethered at four corners of a square plot of side 50 m, so that they just can reach one another. What area will be left ungrazed ? .
	SECTION C
Q.11	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.12	From the top of a building 100m high, the angles of depression of the top and bottom of a tower are observed to be 45° and 60° respectively. Find the height of the tower. Also find the distance between the foot of the building and the bottom of the tower.
Q.13	The perimeters of the ends of the frustum of a cone are 207.24 cm and 169.56 cm. If the height of the frustum be 8 cm, find the whole surface

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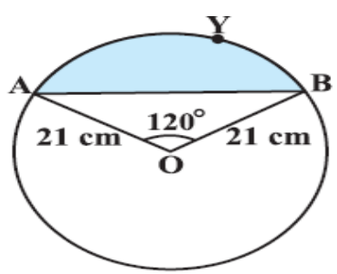
	area of the frustum. (Use $\pi = 3.14$) .
Q.14	A boy is standing on the ground and flying a kite with 100 m of string at an elevation of 30^0. Another boy is standing on the roof of a 10 m high building and is flying his kite at an elevation of 45^0. Both the boys are on opposite sides of both the kites. Find the length of the string that the second boy must have so that the two kites meet.
Q.15	Solve $\frac{1}{(a+b+x)} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}$, $a + b \neq 0$.
Q.16	There are 150 persons working in a factory out of which 80 are able to form judgments 15 are able to reason. Find the probability of persons: (i) who are able to form judgment? (ii) who are able to reason ?(iii) which moral values are reflected here ?
Q.17	The sum of first three term of an AP is 33 . If the product of the first and third term exceeds the second term by 29 , find the AP.
Q.18	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 30^0 .
Q.19	Find the area of the segment AYB shown in Fig. 12.9, if radius of the circle is 21 cm and  AOB = 120°. (Use $\pi = \frac{22}{7}$). Fig. 12.9
Q.20	Find the coordinates of the points which divide the line segment joining A (2, - 3) and b (- 4, - 6) into three equal parts.
	SECTION D

Q.21	Milk in a container, which is in the form of a frustum of a cone of height 30 cm and the radii of whose lower and upper circular ends are 20 cm and 40 cm respectively, is to be distributed in a camp for flood victims. If this milk is available at the rate of Rs. 35 per litre and 880 litres of milk is needed daily for a camp, find how many such containers of milk are needed for a camp and what cost will it put on the donot agency for this. What value is indicated through this by the donor agency?
Q.22	Due to sudden floods, some welfare associations jointly requested the government to get 100 tents fixed immediately and offered to contribute 50% of the cost. If the lower part of each tent is of the form of a cylinder of diameter 4.2 m and height 4 m with the conical upper part of same diameter but of height 2.8 m, and the canvas to be used costs Rs. 100 per sq.m, find the amount, the association will have to pay. What values are shown by these association? [Use $\pi = 22/7$]
Q.23	Three eighth of the students of a class opted for visiting an odd age home. Sixteen students opted for having a nature walk. Square root of total number of students in the class opted for three plantation in the school. The number of students who visited an odd age home is same as the number of students who went for a nature walk and did tree plantation. Find the total number of student. What values are inculcated in students through such activities?
Q.24	The minimum age of children to be eligible to participate in a paining competition is 8 years. It is observed that the age of youngest boy was 8 years and the ages of rest of participants are having a common difference of 4 months. If the sum of ages of all the participants is 168 years, find the age of eldest participant in the painting competition.
Q.25	Four equal circles are described at the four corners of a square so that each touches two of the other. The shaded area enclosed between the circles is $\frac{24}{7}$ cm^2. Find the radius of each circle.

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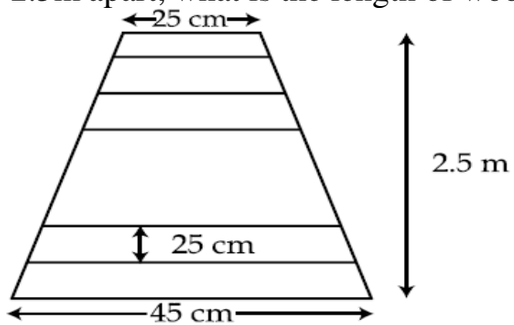
Q.26	A ladder has rungs 25cm apart. The rungs decreased uniformly in length from 45cm at the bottom to 25cm at the top (see figure). If the top and bottom rungs are 2.5m apart, what is the length of wood required for the rungs? 
Q.27	The radius of the in circle of a triangle is 2 cm and the segments into which one side is divided by the point of contact are 3 cm and 4 cm . Determine the other two sides of triangle.
Q.28	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 ?
Q.29	From a window 15 meters 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 30^0 and 45^0 respectively . Show that the height of the opposite house is 23.66 meters. $(take \sqrt{3} = 1.732)$
Q.30	Find the coordinates of the point which is at a distance of 2 units from (5 , 4) and 10 units from(11,-2) .
Q.31	Prove that the intercept of a tangent between two parallel tangents to a circle subtends a right angle at the centre.
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	A MAN WHO DOESN'T TRUST HIMSELF ; CAN NEVER TRULY TRUST ANYONE ELSE

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