

Guess Paper – 2009

Class – X

Subject – Mathematics

Time: 2½ Hrs

Marks: 80

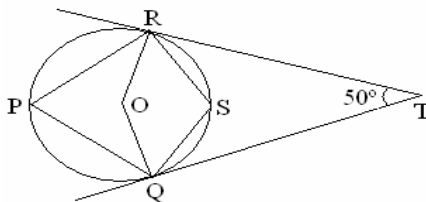
General Instructions:

1. Answer to this paper must be written on the paper provided separately. You will NOT be allowed to write during the first 15 minutes. This time is to be spent in reading the question paper only.
2. The time given at the head of this paper is the time allowed for writing the answers.
3. Answer all questions from Section – A, and any Four from Section – B.
4. All working, including rough work, must be clearly shown and must be done on the same sheet as the rest of the answer. Omission of essential working will result in the loss of marks.
5. The intended marks for questions or parts of questions are given in the brackets ().
6. Mathematical (Logarithm) tables are provided on request.

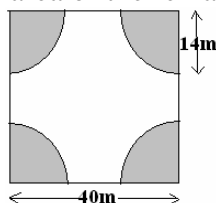
Section – A

(Answer all the questions from this Section)

- 1.a) Kavitha goes to purchase a bike which is priced at Rs.35,640 including 10 % sales tax. However the actual rate of sales tax at the time of purchase is 7 %. Find the extra profit made by the shopkeeper if he still charges the original listed price. (3)
 - b) If $x \in \mathbb{Z}$, Find the solution set for the inequation $5 < 2x - 3 \leq 14$. and graph it on a number line. (3)
 - c) If $5x - 11y = 2x + 5y$, then find the value of $\frac{3x^2 + 2y^2}{3x^2 - 2y^2}$ (4)
- 2 a) In the given figure, O is the centre of the circle. TQ and TR are two tangents drawn from T to the circle and $\angle QTR = 50^\circ$. Calculate $\angle QPR$ and $\angle QSR$. (3)

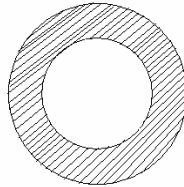


- b) At each corner of a square park of side 40 m, there is a flower bed in the form of a sector of radius 14 m as shown in the figure. Find the area of the remaining part of the park. (3)



- c) A man invests Rs 20020 in buying shares of nominal value Rs 26 at 10 % premium. The dividend on the shares is 15 % per annum. Calculate
 - i) The number of shares he buys.
 - ii) The dividend he receives annually.

- iii) The rate of interest he gets on his money. (4)
- 3 a) The shaded area, in the given diagram, between the circumferences of two concentric circles is 346.5 cm^2 . The circumference of the inner circle is 88 cm. Calculate the radius of the outer circle. (3)



- b) Profit of Rs100 at each stage of the selling chain, 'A' is a manufacturer of a DVD player and the cost price of each DVD player is Rs 2,600. He sells it to 'B', 'B' sells it to 'C' and 'C' sells it to 'D'. The rate of VAT is 12.5 %. Find : i) The total amount of VAT paid. (3)
- ii) The selling price for 'D' (3)
- c) A sum amounts to Rs 2,916 in 2 years and to Rs 3,149.28 in 3 years at compound interest. Find : (4)
- i) The rate of interest per annum. ii) The sum. (4)
- 4 a) The line joining the points A (4, -5) and B (4, 5) is divided by the point 'P', such that $\frac{AP}{PB} = \frac{2}{5}$. Find the co-ordinates of 'P' (3)
- b) When $f(x) = 2x^3 + ax^2 + bx - 5$ is divided by $(x - 1)$, the remainder is 5 and when $f(x)$ is divided by $(x - 2)$, the remainder is 41. Hence with the help of the remainder theorem find 'a' and 'b' (3)
- c) Use graph paper for this question. Take 1 cm = 1 unit on both the axes. Plot points A(5,3), B(2,-1) and C(2,7). i) Draw the line of symmetry of $\triangle ABC$. (3)
- ii) Mark the point D, If the line in (i) and the line BC are both lines of symmetry of the quadrilateral ACDB, write the co-ordinates of the point D. (4)
- iii) Assign a special name to the quadrilateral ACDB. (4)

Section – B

(Answer any **FOUR** questions from this Section)

- 5 a) Find the probability of drawing (i) A spade (ii) A red card (iii) a face card from a pack of 52 cards in a single draw (3)
- b) If the mean of five observations $x, x + 2, x + 4, x + 6$ and $x + 8$ is 11. then find the mean of the first three observations. (3)
- c) An aeroplane is flying horizontally 1000 m above the ground is observed at an angle of elevation of 60° , after 10 seconds, its elevation is observed to be 30° . Find the speed of the aeroplane. (4)
- 6 a) i) Point A (5,0) on reflection is mapped as A' (-5,0). State the equation of the mirror line. (3)
- ii) Point B (4,-3) on reflection is mapped as B' (4,3). State the equation of the mirror line. (3)
- iii) Point C (-3,5) on reflection $y = 2$ is mapped as C' Find the co-ordinates of C' (3)
- b) Find the HCF of the following polynomials : $18(x^3 - x^2 + x - 1)$, and $12(x^4 - 1)$ (3)
- c) An exhibition tent is in the form of a cylinder surmounted by a cone. The height of the tent above the ground is 85m and the height of the cylindrical part is 50m. If the diameter of the base is 168m, find

the quantity of canvas required to make tent. Allow 28 % extra cloth for folds and stitching. Give your answer to the nearest m^2 (4)

- 7 a) Using the data given below, Construct a cumulative frequency table and draw the ogive. From the ogive determine the median marks. (5)

Marks	0 – 5	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30	30 – 35	35 – 40
No of Students	3	7	15	24	16	8	5	2

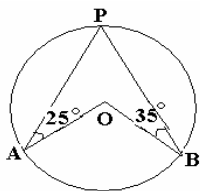
- b) Using the ruler and compasses only:

i) Construct a $\triangle ABC$ with $BC = 6$ cm, $\angle ABC = 120^\circ$, and $AB = 3.5$ cm.

ii) In the same figure, draw a circle with BC as diameter. Find a point 'P' on the circumference of the circle which is equidistant from AB and BC . Measure $\angle BCP$. (5)

- 8 a) A train covers a distance of 600 km at x km/hr. Had speed been $(x + 20)$ km/hr, the time taken to cover the distance would have been reduced by 5 hours. Write down an equation in 'x' and solve it. (5)

- b) In the given figure, Find i) $\angle APB$ and ii) $\angle AOB$. (2)

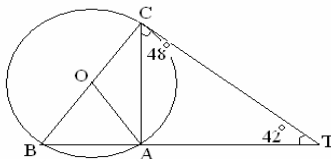


- c) Prove that $\sqrt{\frac{1 + \cos A}{1 - \cos A}} = \operatorname{Cosec} A + \cot A$ (3)

- 9 a) Draw a circle of radius 4cm and mark two chords AB and AC of the circle of length 5cm, and 6 cm respectively. Construct the locus of the points, inside the circle, that are equidistant from the points A, B and C (3)

- b) Given that, $\begin{pmatrix} 8 & -2 \\ 1 & 4 \end{pmatrix} \times B = \begin{pmatrix} 12 \\ 10 \end{pmatrix}$ Write down i) The order of the matrix B
ii) The matrix B (3)

- c) A, B and C are the points on a circle. The tangent at C meets BA produced in T. If $\angle ATC = 42^\circ$, and $\angle ACT = 48^\circ$, then find $\angle AOB$ (4)



- 10 a) Mr. Nair gets Rs 6455 at the end of one year at the rate of 14 % p.a in Recurring Deposit account. Find the monthly installment. (3)
- b) A scale of a map is 1: 400000. A plot of land of area 64 km^2 is to be represented on the map. Find: i) The number of Km on the ground which is represented by 1cm.
ii) The area in km^2 that can be represented by 1 cm^2 .

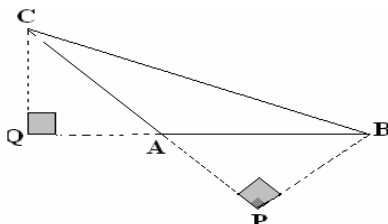
- iii) The area on the map that represented the plot of the land. (3)
- c) A cylindrical can whose base is horizontal and of radius 3.5 cm contains sufficient water so that when a sphere is placed in the can, the water just covers the sphere. Given that the sphere just fits into the can, calculate: i) The total surface area of the can in contact with water when the sphere is in it. (4)
- ii) The depth of water in the can before the sphere was put in to the can. (4)

11 a) A page from Neha's pass book is given below :

Date	Particulars (In Rs)	Withdrawls (Rs)	Deposits (In Rs)	Balance (In Rs)
01-10-2007	B/F	*****	*****	5,000
09-11-2007	By Cash	*****	8,000	13,000
08-12-2007	By Cash	*****	8,000	21,000
20-12-2007	To Cheque No. 048557841	9,000	*****	12,000
25-01-2008	By Cash	*****	8,000	20,000
16-02-2008	By Cash	*****	8,000	28,000
27-02-2008	To Cheque No. 048557842	19,000	*****	9,000
07-03-2008	By Cash	*****	8,000	17,000
04-04-2008	By Cash	*****	8,000	25,000
18-04-2008	By Cash	*****	2,000	27,000
27-05-2008	By Cash	*****	8,000	35,000
14-06-2008	To Cheque No. 048557843	10,000	*****	25,000

Neha closes the account finally on 24-06-2008. Find the interest she gets at the rate of 3.5 % p.a (5)

- b) In $\triangle ABC$, $\angle A$ is obtuse, PB is perpendicular to AC, and QC is perpendicular to AB. Prove that $AB \times AQ = AC \times AP$ (5)



The End