# Summative Question Paper 2010-2011 Mathematics Second Term (SA-1I) Class X

Time: 3:00 hours

**General Instructions** 

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i) All questions are compulsory.

ii) The questions paper consists of 34 questions divided into four sections A, B, C and D.
 Section A comprises of 10 questions 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.

iii) 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.

iv) 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 of the alternatives in all such questions.

v) Use of calculators is not permitted.

## Section A

c) -

*Q1* The quadratic equation  $ax^2 - bx + c = 0$  is perfect square, the value of c is

b) b/2a

a) -b/2a $b^2/4a$  d)  $b^2/4a$ 

Q2 the sides of right angle  $\Delta$  are in A.P, what is the ratio of sides

a) 1:2:3 b) 2:3:4 c) 3:4:5 d) 5:8:11

Q3 To construct a  $\Delta$  similar to given  $\Delta$ ABC, with the sides 3/7 of corresponding sides of  $\Delta$ ABC, first draw a ray BX such that  $\angle$ CBX is an acute angle with X lies on opposite side of A with respect to BC. Then locate point B<sub>1</sub>, B<sub>2</sub>, ------, at equal distance. Next step is to join

a)  $B_{10}$  to C b)  $B_7$  to C c)  $B_3$  to C

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<u>M.M.: 80</u>

	cbse guess			CBSEGuess.com		
I	d) $B_4$ to C					
	Q4 If AB is diameter of circle, $\angle PBA = 40^{\circ}$ , the value of $\angle BCP$ is					
a)	$10^{0}$	b) 80 <sup>0</sup>		c) $140^{\circ}$		
	d) 70					
	$Q5$ A circle is touching the sides BC of $\triangle$ ABC at P and touching AB and AC produce at Q and R respectfully. AB=BC = CA = 5cm. length of tangent AQ is					
a)	7.5cm	b) 15cm		c) 5cm		
	d) 7cm					
	Q6 If OA and OB are radii of a circle and PA, PB are tangent, and then quadrilateral OPAB is					
a)	Rhombus	b) kite shaped		c) Rectangle	d)Trapezium	
	Q7 Two circular cones X and Y are made ,X having three times the radius of Y and Y having half the volume of X. the ratio of heights of X and Y is					
a)	1:3	b) 2:3		c) 2:9	d)5:9	
	Q8 the area of sector whose radius is 5cm and length arc is 5cm					
a)	$\frac{55}{252} \mathrm{cm}^2$	b) $\frac{55}{75}$ cm <sup>2</sup>		c) 25cm <sup>2</sup>	d) 12.5cm <sup>2</sup>	
	<b>Q9</b> . Length of string a kite and a point on the ground is 85m. It string makes an angle $\theta$ with level ground. Such that $\tan\theta = 15/8$ , height of the kite is					
a)	85m	B) 5m		c) 17m	d) 8.5m	
	<i>Q10</i> A number is chosen at rand 2 is	lom from the numbe	er -3, -2, -1, 0,	1, 2, 3, the probability	that $-2 < x <$	
a)	4/7	b) 5/7		c) 2/7	d) 3/7	
	Section-B					
	<b>Q11</b> ) Determine the value of k for which the quadratic equation $(k+5) x^2 - (2k+3) x + (k-1) = 0$ , has					

no real roots.

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Solve; 
$$\frac{1}{2 - \frac{1}{2 - \frac{1}{2 - x}}}, x \neq 2$$

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**Q12**) Find the values of x, given that the three consecutive term of an A.P as;  $3x^2 + 4x + 4$ ,  $2x^2 + 3x + 3$ , 3x + 8.

Q13) A circle is inscribed in a  $\triangle$ ABC, having sides 8cm, 10cm and 12cm. Find AD, BE and CF.

Q14) Find the area of shaded region, quadrants shown in the figure is each of 7cm.

Q15) Find the volume of largest right circular cone that can be cut of a cube whose edge is 9cm.

**Q16**) If (-3, a) is image of point (1, a + 4) in point (b, 1), find the value of a and b.

Q17) Find the length of median through A of a triangle whose vertices are A (-1, 3), B (1, -1) and C (5,1).

Q18) Two dice are thrown simultaneously, find probability of getting,

i) a prime number on first and composite on other. ii) A product of composite number.

### Section-C

**Q19**) Find roots of equation;  $\frac{a}{x-b} + \frac{b}{x-a} = 2$ ,  $x \neq a$ , b

Q20) Find the sum of integer from 1 to 100 that is divisible by 2 or 5.

### Or

If p<sup>th</sup> and q<sup>th</sup> term of an A.P. are  $\frac{1}{qr}and\frac{1}{pr}$  respectively, find the r<sup>th</sup> term.

**Q21**) Two tangent segment BC and BD are drawn to a circle with centre O. such that  $\angle CBD = 120^{\circ}$ . Prove that BO = 2BC.

**Q22**) Construct a  $\triangle$ ABC whose sides are in ratio 2 : 3 : 4 and perimeter equal

to 12cm. Construct another  $\triangle ABC'$  similar to  $\triangle ABC$  such that  $AB' = \frac{4}{3}AB$ .

**Q23**) In a circular table covers of radius 32cm, designs formed leaving a equilateral  $\triangle$ ABC. Find the area of design.

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**Q24**) A spherical water pot is kept on a rectangular slab of cement 20cm x 20cm x 10cm. One fourth pot gets embedded into the slab for balance. The total volume of pot and slab be  $\frac{50000}{7}$  cm<sup>3</sup>, find the radius of pot. Or

The barrel of a fountain- pen, cylindrical in shape, is 7cm long and 5mm in diameter. A full barrel of ink in the pen will be used up on writing 330 words on an average. How many words would use up a bottle of ink containing one fifth of a liter?

Q25) Two posts are 120m apart and height of one is double that of other. From the midpoint of the line joining their feet, an observer finds the angular elevation of their top to be complementary. Find the height of post.

Q26) From a well shuffled deck of 52 cards, a card is drawn. What is chance that

i) It is neither a king nor a spade.

ii) ii) It is a king or a heart or a red card.

iii) iii) It is red card or honour card.

Or

An integer is selected at random from first one hundred positive integers. Find the probability that integer chosen is either multiple of 5 or a multiple of 7.

**Q27**) The line joining the points (2, 1) and (5, -8) is trisected by the points P and Q. If point lies on the line 2x - y + k = 0, Find value of k.

**Q28**) The Point A divides the joining P (-5, 1) and Q (3, 5) in the ratio k : 1. Find the value of k for which  $ar(\Delta ABC) = 2$  sq.unit, where B is (1, 5) and C(7, -2)

### Section-D

*Q29*) If the roots of the equation  $(b - c) x^2 + (c - a) x + (a - b) = 0$  are equal, prove that a, b and c are in A.P

Or

A pole has to be erected at a point on the boundary of a circular park of diameter 13m such a way that difference of its distance from two diametrically opposite gates A&B on the boundary is 7m.Is it possible to-do so. If yes at what distance from the two gates should the pole be erected?

Q30) Find the common difference of an A.P. whose first term is 100 and sum of whose first six term is five times the sum of next six terms.

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**Q31**) From a solid sphere of radius of 5cm, a right circular cylindrical hole of radius 3cm, with its axis passing through the centre, is removed Find total surface area and volume of remaining solid. (Use  $\pi = 3.14$ ) Or

The height of right circular cone is trisected by two plane parallel to its base. Show that the volume of the three portion from top are in the ratio 1:7:19.

Q32) Prove that a tangent to a circle is perpendicular to the radius through the point of contact.

**Q33**) In fig. Diameter AB = 42cm and D is mid-point of AB. Semi-circles are drawn on AD, BD as diameter. A circle with centre O touches all three circles. If AC =  $21\sqrt{3}$  cm, find the area of shaded region.

**Q34**) A ladder rests against a wall at an angle  $60^{\circ}$  to the horizontal. Its foot is pulled away from the wall through a distance x, so that it slides a distance y down the wall, makes an angle  $30^{\circ}$  with the

horizontal. Find  $\frac{x}{v}$ 



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