CLASS 10
GUESS PAPER TERM 1
MATHS (STANDARD) - 041

Time Allowed: 90 minutes **Maximum Marks: 40**

General Instructions:

1. The question paper contains three parts A, B and C

2. Section A consists of 20 questions of 1 mark each. Any 16 questions are to be attempted

3. Section B consists of 20 questions of 1 mark each. Any 16 questions are to be attempted

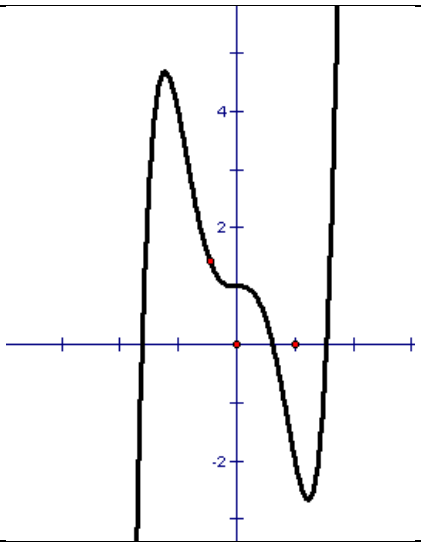
4 Section C consists of 10 questions based on two Case Studies. Attempt any 4 questions from each Case Studies.

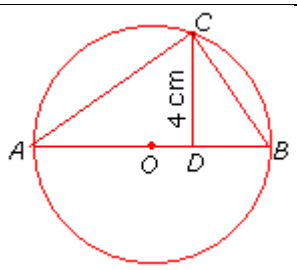
5. There is no negative marking.

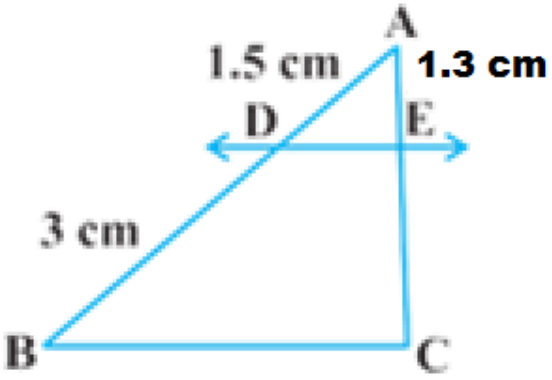
SECTION A

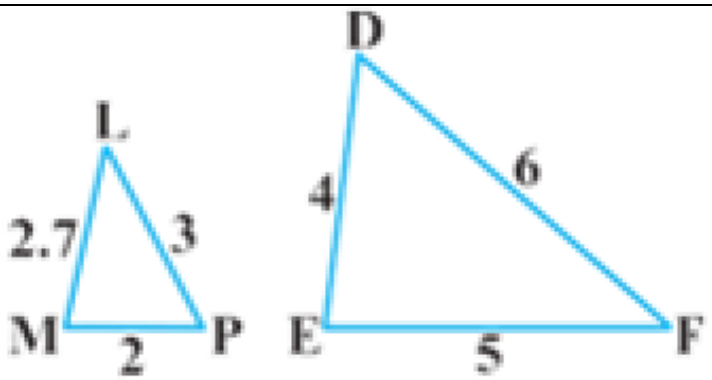
(Section A consists of 20 questions of 1 mark each. Any 16 questions are to be attempted)

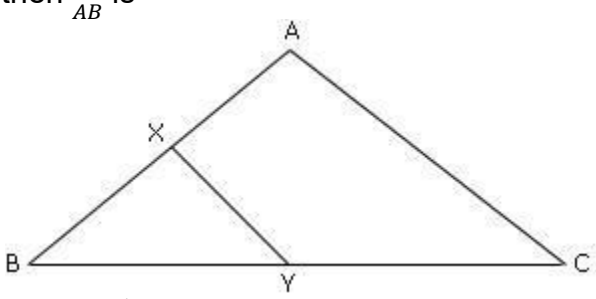
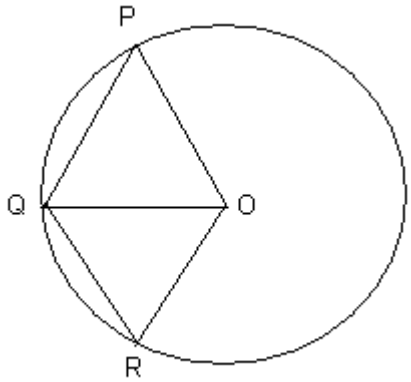
1.	Given positive integers a and b, there exist unique integers q and r satisfying a = bq + r, provided a) $0 \leq b < r$ b) $0 \leq r \leq b$ c) $0 \leq r < b$ d) $0 < b \leq r$	[1]
2.	The number of zeroes of a polynomial y = f(x) as shown below is a) 3 b) 2 c) 4 d) None of these	[1]

		
3.	For what values of k, the following pair of linear equations have no solution? $(3k + 1) x + 3y - 2 = 0$ $(k^2 + 1)x + (k - 2)y - 5 = 0$ a) -1 b) 1 c) -2 d) 2	[1]
4.	If there are two children in a family, find the probability of having exactly two boys in the family. (a) 0.25 (b) 0.5 (c) 0.75 (d) 1	[1]
5.	If $\tan \theta + \cot \theta = 2$, find the value of $\tan^2 \theta + \cot^2 \theta$ (a) 1 (b) 2 (c) 4 (d) -2	[1]
6.	D is a point on the side BC of a triangle ABC such that $\angle ADC = \angle BAC$. then CA^2 a) CB.CD. b) BD.CD c) AD.CD d) None of the above	[1]
7.	The area of a right angled triangle ACB if the radius of its circumcircle is 5 cm and the altitude drawn to the hypotenuse is 4 cm.	[1]

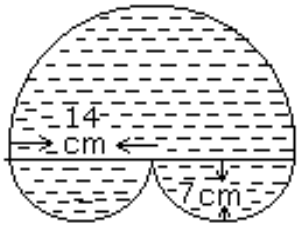
	 (a) 40 cm^2 (b) 10 cm^2 (c) 20 cm^2 (d) 25 cm^2	
8.	Cards marked with the numbers 2 to 101 are placed in a box and mixed thoroughly. One card is drawn at random from this box. Find the probability that the number on the card is a perfect square. (a) $\frac{9}{10}$ (b) $\frac{1}{10}$ (c) $\frac{9}{100}$ (d) None of these	[1]
9.	If tan $\theta=\frac{4}{3}$, the value of $\sqrt{\frac{\sec\theta-cosec\ \theta}{\sec\theta+cosec\ \theta}}$ is a) $\frac{1}{\sqrt{7}}$ b) $\frac{-1}{\sqrt{7}}$ c) $\pm\frac{1}{\sqrt{7}}$ d) None of the above	[1]
10.	If LCM (224, 252) = 2016, then HCF (224, 252) is a) 42 b) 28 c) 63 d) 8	[1]
11.	A horse is tethered to a corner of a field which is of the shape of a triangle. If the length of the rope by which it is tied is 7 metres, find the area of the field over which it can graze a) 154 m^2 b) 77 m^2 c) 38.5 m^2 d) -77 m^2	[1]
12.	If polynomials f(x), g(x), q(x) and r(x) satisfying f(x) = g(x) . q(x) + r(x) where deg r(x) = 0. Then the degree of g(x) is a) 0 b) 1 c) 2	[1]

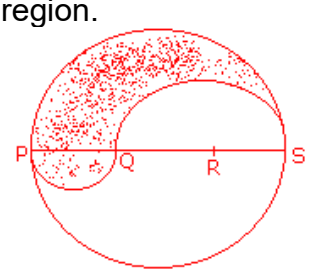
	d) Any positive integer	
13.	 In the above Fig., DE || BC. Then length of EC is (a) 2cm (b) 2.6 cm (c) 3.9 cm (d) None of these	[1]
14.	A number consists of two digits whose sum is 8. If 18 is added to the number, the digits interchange their places, the two digits number is a) 35 b) 71 c) 17 d) 53	[1]
15.	A sector is cut off from a circle of radius 21 cm. The angle of the sector is 120°. Find the length of its arc. a) 22cm b) 44 cm c) 88 cm d) 132cm	[1]
16.	If the sum of zeroes of the polynomial x^2 - (2k + 3)x + (3k + 4) is -3.Then k is equal to a) -4 b) -3 c) -2 d) -1	[1]

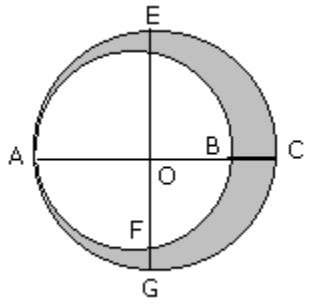
17.	 The angle equal to angle L of triangle LPM in triangle DEF is a) D b) E c) F d) None of these	[1]
18.	If the cube of any positive integer 'a' is of the form 9m,9m+1 or 9m+8 as per Euclid's division lemma, the positive integer 'a' can be expressed as a=bq+r, then b is equal to a) 9 b) 8 c) 3 d) 27	[1]
19.	A letter of the English alphabet is chosen at random. Calculate the probability that the letter so chosen precedes k and is a vowel. a) $\frac{1}{26}$ b) $\frac{2}{26}$ c) $\frac{3}{26}$ d) $\frac{4}{26}$	[1]
20.	Find the value of p if the line represented by the equation $2x - py = 12$ passes through the point (1, -1). a) -10 b) 14 c) 10 d) None of these	[1]
		[1]

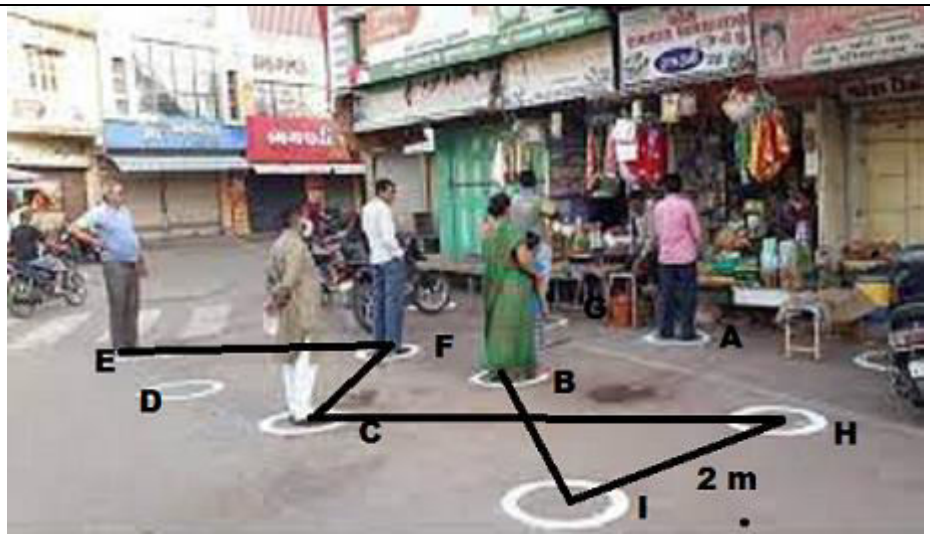
	SECTION-B Section B consists of 20 questions of 1 mark each. Any 16 questions are to be attempted	
21.	In figure, XY || AC and XY divides the triangular region ABC into two parts of equal in area. then $\frac{AX}{AB}$ is  a) $\frac{1}{\sqrt{2}-1}$ b) $\frac{\sqrt{2}+1}{\sqrt{2}}$ c) $\frac{\sqrt{2}}{\sqrt{2}+1}$ d) $1-\frac{1}{\sqrt{2}}$	[1]
22.	In the figure, OPQR is a rhombus, three of whose vertices lie on a circle with centre O. If the area of the rhombus is $32\sqrt{3}$ square centimetres, find the radius of the circle.  a) 2 cm b) 4 cm c) 8 cm d) 16 cm	[1]

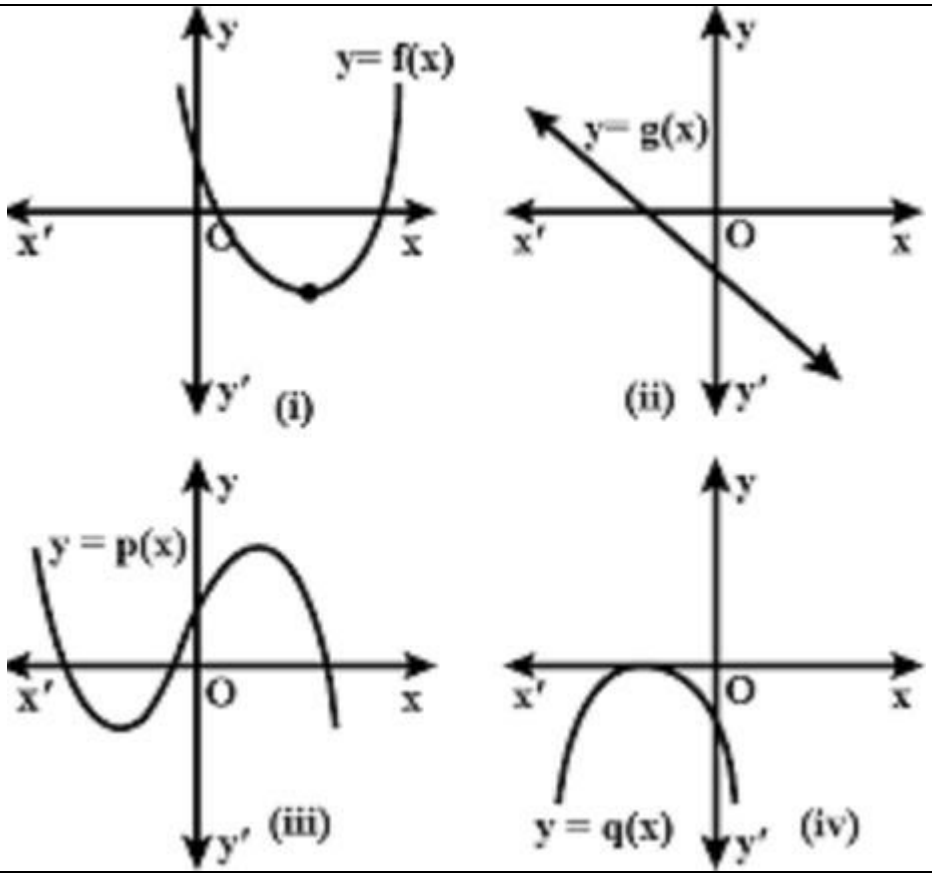
23.	If the HCF of 96 and 336 and express as 96a+ 336b, then the values of a and b are a) -3, 1 b) 3,1 c) -3, -1 d) 3,-1	[1]
24.	A bag contains 6 red balls and some black balls. If the probability of drawing a black ball is double that of a red ball, find the number of black balls in the bag. a) 6 b) 12 c) 18 d) 24	[1]
25.	Solve the given system of equations: 101x + 99y = 499 99x + 101y = 501 a) 2,3 b) -2,3 c) 2,-3 d) Noneof these	[1]
26.	If a - b and a + b are the zeroes of polynomial x^2 - 6x + 4, then a equals to a) $\sqrt{5}$ b) $-\sqrt{5}$ c) 3 d) -3	[1]
27.	Evaluate $\frac{\tan 45^\circ}{\text{cosec}30^\circ} + \frac{\sec 60^\circ}{\cot 45^\circ} - \frac{5 \sin 90^\circ}{2 \cos 0^\circ}$ a) 0 b) 1 c) 2 d) None of the above	[1]
28.	In right angled triangle ABC, $\angle$ABC = 90° and BD $\perp$AC. If AB = 5.7 cm, BD = 3.8 cm and CD = 5.4 cm, find the length of BC. a) 3.6 cm b) 7.2 cm c) 8.1 cm d) None of these	[1]

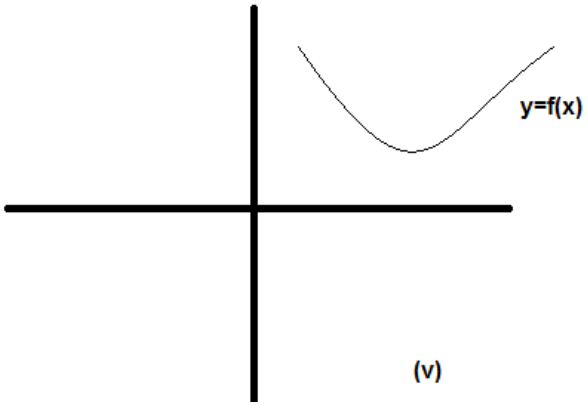
29.	Find the area of the shaded region in the figure:  a) 462 cm^2 b) 308 cm^2 c) 154 cm^2 d) None of these	[1]
30.	the largest number that divides 436 and 542 leaving remainders 11 and 15 respectively is a) 11 b) 17 c) 15 d) None of these	[1]
31.	ABCD is a square, with diagonal AC = $6\sqrt{2}$ cm. Find the perimeter of the square. a) 3 cm b) 6 cm c) 24 cm d) None of the above	[1]
32.	A copper wire, when bent in the form of a square, encloses an area of 484 cm^2. If the same wire is bent in the form of a circle, find the area enclosed by it. a) 88 cm^2 b) 308 cm^2 c) 616 cm^2 d) None of these	[1]
33.	A playground in the form of a rectangle having semi-circles on the shorter sides is shown in the figure. Find the area when the length of the rectangle portion is 80 m and the breadth is 42 m. 	[1]

	a) $7746\ m^2$ b) $7764\ m^2$ c) $3360\ m^2$ d) $1386\ m^2$	
34.	The numerator of a fraction is 3 less than the denominator. If denominator is added to the numerator and numerator is subtracted from the denominator, we get 11/3. Find the fraction. a) $\frac{4}{7}$ b) $\frac{7}{-4}$ c) $\frac{-4}{7}$ d) None of these	[1]
35.	A, B and C starts cycling around a circular path in the same direction at same time. Circumference of the path is 360 km. If the speed of A is 40 m/min, speed of B is 60 m/min and that of C is 72 m/min and they start from the same point, then after what time interval they will be together at the starting point? a) 60 minutes b) 80 minutes c) 90 minutes d) None of these	[1]
36.	PQRS is a diameter of a circle of radius 6 cm. The lengths PQ, QR and RS are equal. Semi-circles are drawn on PQ and QS as diameters. Find the perimeter of the shaded region.  a) 2π b) π c) 3π d) 6π	[1]
37.	Students of a class are made to stand in rows.If one student is extra in a row, there would be 2 rows less. If one student is less in a row, there would be 3 rows more. The number of students of the class is	[1]

	a) 6 b) 60 c) 600 d) 36	
38.	Find the area of the segment of a radius 7 cm if the arc of the segment has measure 90^{o}.	[1]
39.	If the sum of squares of zeroes of the quadratic polynomial $p(x) = x^2 - 4x + k$ is 20, the value of k is a) 2 b) -2 c) 5 d) None of these	[1]
40.	In the figure, O is the centre of the bigger circle and AC is its diameter. Another circle with AB as diameter is drawn. If AC = 54 cm and BC = 10 cm, find the area of the shaded region.  a) 707 cm^2 b) 770 cm^2 c) 3812.3 cm^2 d) None of these	[1]
	SECTION- C Section C consists of 10 questions based on two Case Studies. Attempt any 4 questions from each Case Studies. **CASE STUDY - I**	[1]
		[1]

	 During pandemic the shopkeepers draw the circle of equal radius to maintain distance among the customer to save himself along with other people as shown in the above picture. Observe the picture carefully and answer the followings;	
41.	If the distance between the centers of any two adjacent circle is 2m and circles made horizontally and vertically only. The length of IB must be equal to (a) HI (b) HB (c) HC (d) BC	
42.	If the co-ordinate of H is 8,20) and I is (16,20) then 1 unit = (a) 0 m (b) 0.25 m (c) 0.5 m (d) 1 m	[1]
43.	The type of triangle formed by CEF is (a) Scalene triangle (b) Isosceles triangle (c) Equilateral triangle (d) Right angled triangle	[1]
44.	The co-ordinate of the man standing at F if the co-ordinate of C is (16,0) and I is (24,0) (a) (8,0) (b) (0,8) (c) (8,8) (d) (16,8)	[1]

45.	If you will going to purchase some goods from the shop, where will stand, so as to gets the goods earlier. If the shopkeeper clear horizontally closer to him (a) D (b) I (c) H (d) None of these	[1]
	CASE STUDY - II	
		

	 (v) The above graphs are plotted for some quadratic equations, study them carefully and answer the following questions accordingly.	
46.	If $p(x)= ax^2+bx+c$, used to get the graph in (ii), then the value of a is (a) 1 (b) –ve integer (c) Neither negative nor positive (d) None of these	[1]
47.	The number of zeroes in (iii) is (a) 1 (b) 2 (c) 3 (d) None of these	[1]
48.	The number of zeroes in (iv) and their relation is (a) 1 and positive (b) 2 and equal (c) 3 and unequal (d) 4 and equal	[1]
49.	The standard form of the polynomial to represent the fig (i) is (a) $–ax^2+bx+c$ (b) ax^2+bx+c (c) $bx+c$ (d) None of these	[1]
50.	The number of zeroes in y= f(x) in (v) is (a) 0 (b) 1 (c) 2 (d) 3	[1]