ROLL No

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(REGION- AGRA)
SAMPLE PAPER FOR SESSION ENDING EXAM (2020-21)
MATHEMATICS
CLASS-IX

TIME ALLOWED: 3 HRS   MM-80
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General Instructions:
1. This question paper contains two parts A and B.
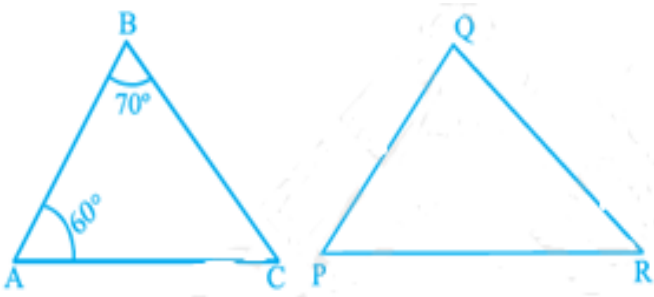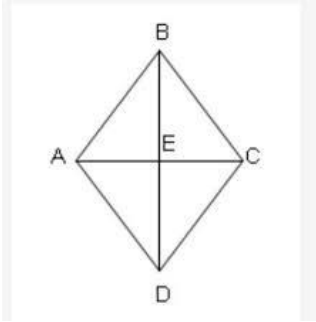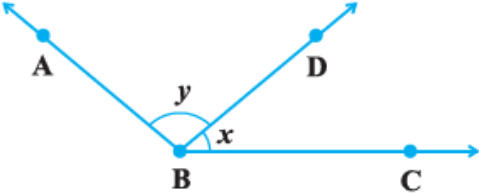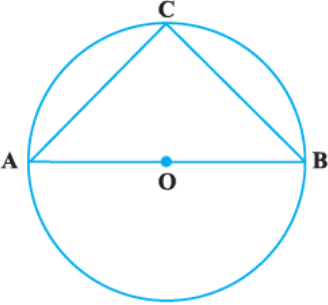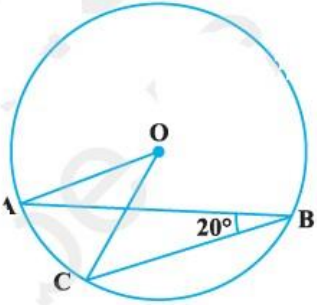2. Both Part A and Part B have internal choices.

Part – A:
1. It consists two sections- I and II.
2. Section I has 16 questions of 1 mark each. Internal choice is provided in 5 questions.
3. Section II has 4 questions on case study. Each case study has 5 case-based sub-parts. An examinee is to attempt any 4 out of 5 sub-parts.
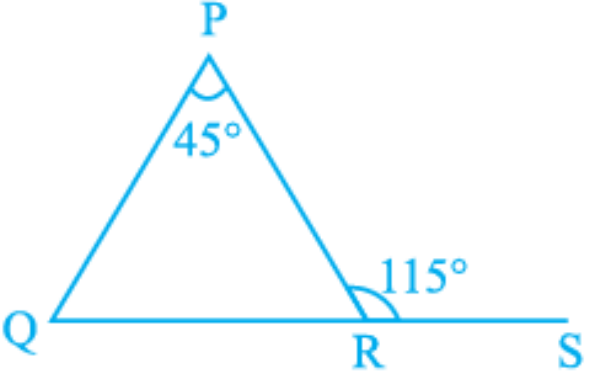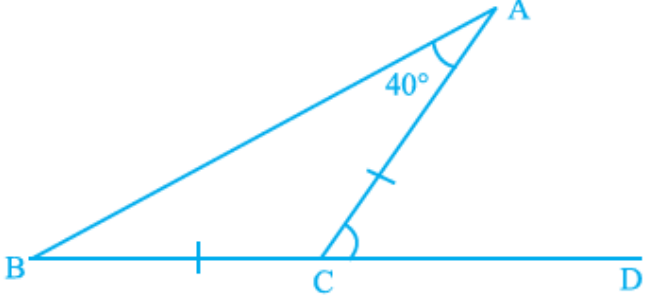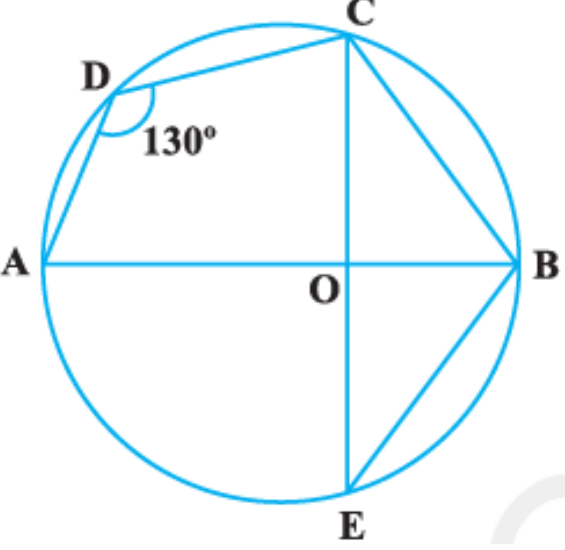
Part – B:
It consists three sections- I , II and III
1. section-I , Question No 21 to 26 are Very short answer Type questions of 2 mark each,
2. Section-ii , Question No 27 to 33 are Short Answer Type questions of 3 marks each
3.Section-III , Question No 34 to 36 are Long Answer Type questions of 5 marks each.
4. Internal choice is provided in 2 questions of 2 marks, 2 questions of 3 marks and 1 question of 5 marks

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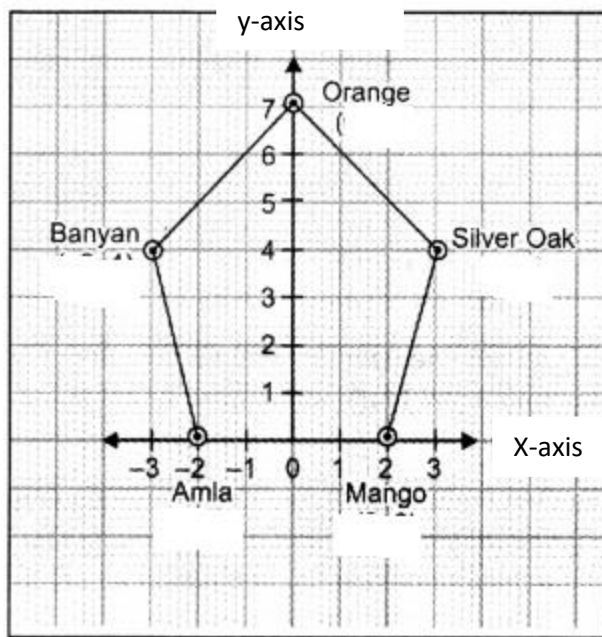| Q.N	PART-A	MARK
	SECTION-I	
1	What is the value of the Polynomial, $P(x)= x^2-5x -6$ at x=2 ?	1
2	Write any one irrational number between 2 and 4	1
3	If in the following figure, Δ ABC $\cong \Delta$ QPR, find the measure of $\angle$ R	1
4	What is the total surface area of a solid hemisphere of radius r ? **OR** Volumes of two spheres are in the ratio 64:27. Find the ratio of their radii .	1
5	Find the range of the data 91, 82, 100, 100, 96, 65, 82, 76, 79, 90, 46, 64, 72, 68, 66, 48, 49.	1

6	Write the degree of the polynomial $P(x) = 0x^5 + 4x^4 + 0x^3 + 5x + 7$.	1
7	Find the zero of the polynomial $p(x) = 2x + 5$	1

8	ABCD is a rhombus such that $\angle ACB = 40^\circ$. Then $\angle ADB$ is	1

9	For what value of $x + y$ in the given Fig. Will ABC be a line? Justify your answer.	

10	In the given figure If AOB is the diameter of the circle and AC = BC, then $\angle\angle CAB$ is equal to:	

Or

In the given figure , if $\angle ABC = 20^\circ$, then $\angle AOC$ is equal to:

11	Three angles of a quadrilateral are 75°, 90° and 75°. Find the fourth angle .	1
12	Find the surface area of four walls of a cube whose length is 5 cm.	1
13	In which cases of quadrilateral , Diagonal are perpendicular to each other ?	1

14	Using ruler and compass , Draw an angle of 90^0	1
15	In the given Figure , side QR of a $\triangle$PQR has been produced to the point S. If $\angle$PRS = 115° and $\angle$P = 45°, then find $\angle$Q. **OR** In the given Figure, BC = CA and $\angle$A = 40. Then, find $\angle$ACD . 	1
16	In the given Figure ,$\angle$ADC = 130° and chord BC = chord BE. Find $\angle$ CBA 	1

	SECTION – II	
	Case study based questions are compulsory. Attempt any four sub parts of each question. Each subpart carries 1 mark	
17	On environment day, class-9 students got five plants of mango, silver oak, orange, banyan and amla from soil department. Students planted the plants and noted their locations as (x, y).Observing the below given graph, answer the following	
(I)	The above graph is of which type of polygon (A) Pentagon (B) Hexagon (C) Heptagon (D) Quadrilateral	1
(II)	In the given figure ,The abscissa of point, where the Amla tree planted is (A) 2 (B) - 2 (C) 0 (D) -3	1
(III)	The distance of Silver Oak tree from x-axisis (A) 3 unit (B) 4 unit (C) -3 unit (D) None	1
(IV)	The coordinate of location point of orange tree (A) (0,7) (B) (7,7) (C) (0,0) (D) (7,0)	1
(V)	The coordinates ,Where the line joining the location points of Banyan and Silver Oak tree meet the y-axis (A) (4,0) (B) (4,4) (C) (-4 ,4) (D) (0,4)	1

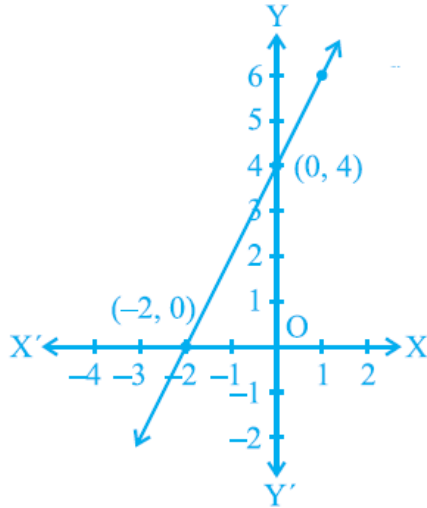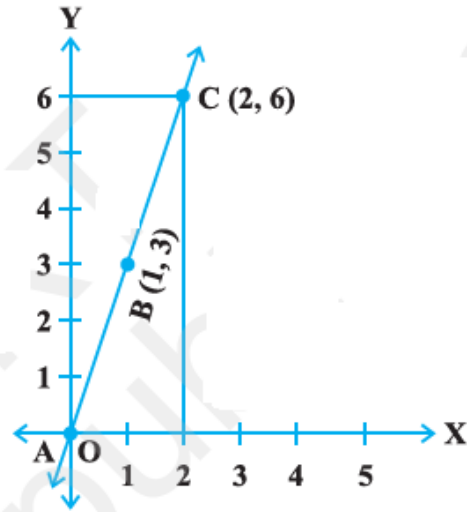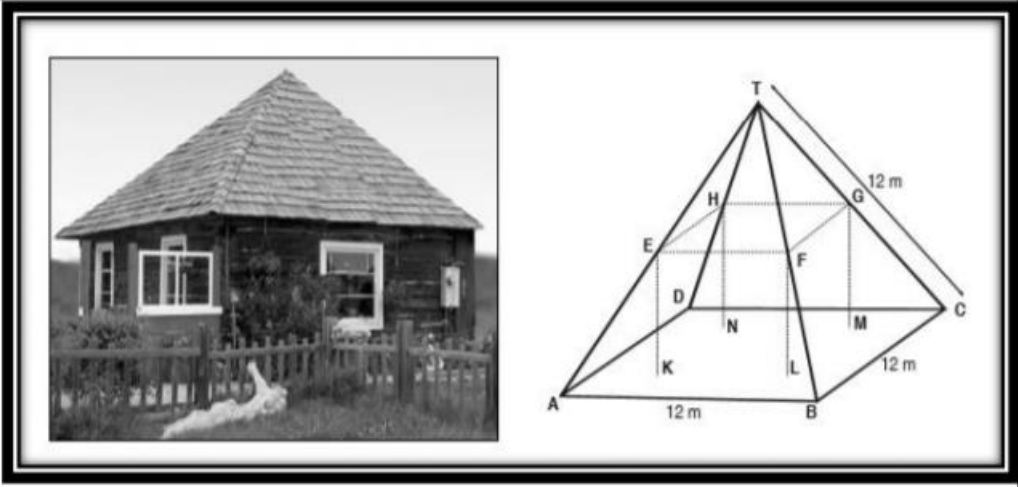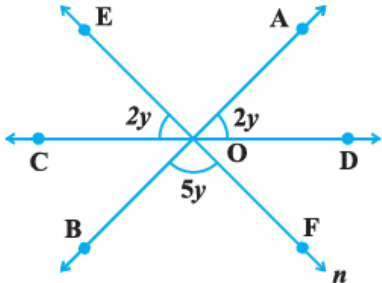|		
18	There are two types of taxi fare in a city are as follows :- Type-1 : For the first kilometre, the fare is Rs 4 and for the subsequent distance it is Rs 2 per km. Type-2 : The taxi fare is Rs 3 per km. Taking the distance covered as x km and total fare as Rs y, Figure-A (TYPE-A) Figure-B (TYPE-B)	
(I)	Which type of taxi is beneficial to hire ? (A) A TYPE (C) Both A & B cost same (B) B TYPE (D) None	1
(II)	Which of the following is not a solution of the line shown in figure-A (A) (0,4) (C) (1,2) (B) (-2,0) (D) (1,6)	1
(III)	Which of the following equation represent the graph as shown in figure-B ? (A) X+y=2 (C) x =2y (B) y-3x =0 (D) y=2x+3	1
(IV)	How many solutions of a linear equation have ? (A) One (C) Many (B) Only two (D) None of these	1
(V)	For what value of K, the linear equation $2x + k y = 8$ has equal values of x and y ? (A) 4 (C) 5 (B) 3 (D) 6	1
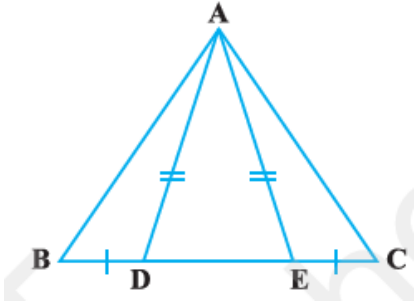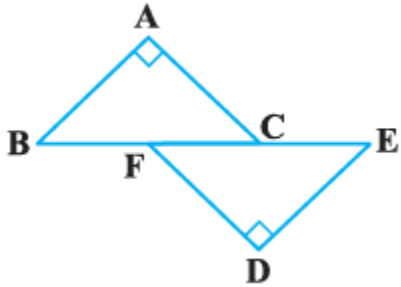
| 19 | Over the past 200 working days, the number of defective parts produced by a machine is given in the following table: | |

Number of defective parts Of bulb	0	1	2	3	4	5	6	7	8	9	10	11	12	13
Days	50	32	22	18	12	12	10	10	8	6	6	6	2	2

Determine the probability that tomorrow's output will have

(I)	No defective parts of bulb	1

(A) 0.25   (C) 0.001
(B) 0.10   (D) 0.05

(II)	At least one defective parts of bulb	1

(A) 0.16   (C) 0.60
(B) 0.41   (D) 0.75

(III)	More than 13 defective parts of bulbs	1

(A) 0.5   (C) 0
(B) 1   (D) None

(IV)	Less than 14 defective parts of bulbs	1

(A) 0   (C) 0.5
(B) 1   (D)None

(V)	Prime number defective parts of bulbs	1

(A) 0.30   (C) 0.35
(B) 0.54   (D) None of these

20	Here you see a photograph of a farmhouse with a roof in the shape of a pyramid. Next to it is a student's mathematical model of the farmhouse roof with measurements added. The attic floor, ABCD in the model, is a square. The beams that support the roof are the edges of a block (rectangular prism) EFGHKLMN. E is the middle of AT, F is the middle of BT, G is the middle of CT and H is the middle of DT. All the edges of the pyramid in the model have length 12m.	
(I)	Triangle TAB is (A) Isosceles (C) Scalene (B) Equilateral (D) Pyramid	1
(II)	What is the area of triangle TEF ? (A) $9\sqrt{3}$ sq meter (C) $6\sqrt{3}$ sq m (B) 36 sq meter (D) 6 sq m	1
(III)	What is area of floor KLMN ? (A) $9\sqrt{3}$ sq meter (C) 72 sq m (B) 36 sq m (D) 144 sq m	1
(IV)	What is the total outer surface area of triangular part ? (A) $9\sqrt{3}$ sq meter (C) $144\sqrt{3}$ sq meter (B) 36 $\sqrt{3}$ sq meter (D) 168 square meter	1
(V)	What will be the height of triangle TBC corresponding to base BC? (A) 18 meter (C) $6\sqrt{3}$ sq m (B) 6 meter (D) $9\sqrt{3}$ meter	1

Q No	**PART-B**	MM
	SECTION-I	
	All questions are compulsory. In case of internal choices, attempt any one	
21	Write two rational numbers between $3/5$ and $1/2$	2
22	A cube of side 4 cm contains a sphere touching its sides. Find the volume of the gap in Between (π =3.14) OR The height of a cone is 16 cm and its base radius is 12 cm. Find the curved surface area of the cone (Use π = 3.14).	2
23	If $x + 1$ is a factor of $ax^3 + x^2 - 2x + (4a - 9)$, find the value of a.	2
24	Simplify : $\sqrt{45} - 3\sqrt{20} + 4\sqrt{5}$	2
25	Curved surface area of a right circular cylinder is 4.4 m^2. If the radius of the base of the cylinder is 0.7 m, find its height. (π=22/7)	2
26	If the point (3, 4) lies on the graph of $3y = ax + 7$, then find the value of a	2
Q No	**SECTION-II**	MM
	All questions are compulsory. In case of internal choices, attempt any one	
27	Draw the graph of the following equation on the graph paper : 2x-3y -6 =0	3
28	Rationalize the denominator and Evaluate $$\frac{6 - 4\sqrt{3}}{6 + 4\sqrt{3}}$$	3
29	Factorise : $x^3+y^3z^3-3xyz = \frac{1}{2}$ (x+y+z) [(x-y)^2+(y-z)^2+(z-x)^2] OR Factorise :27X^3+y^3+z^3-9xyz	3
30	In the given figure AB , CD and EF are three lines concurrent at O. Find the value of *y*. 	3
31	ABCD is a quadrilateral in which P, Q, R and S are mid-points of the sides AB, BC, CD and DA . Prove that quadrilateral PQRS is parallelogram.	3
32	Construct a $\triangle$ ABC , in which BC = 5cm, $\angle$ B = 75° and AB + AC = 9 cm.	3
33	30 circular plates, each of radius 14 cm and thickness 3cm are placed one above the another to form a solid. Find the total surface area of the solid. (π=22/7)	3

Q No	SECTION-III	MM
	All questions are compulsory. In case of internal choices, attempt any one	
34	In Figure, D and E are points on side BC of a Δ ABC such that BD = CE and AD = AE. Show that Δ ABD ≅ Δ ACE **Or** In the given Figure BA = AC, DE = DF such that BA = DE and BF = EC. Show that Δ ABC ≅ Δ DEF.	5
35	The blood groups of 30 students of Class IX are recorded as follows: A, B, O, O, AB, O, A, O, B, A, O, B, A, O, O, A, AB, O, A, A, O, O, AB, B, A, O, B, A, B, O. Represent this data in the form of a frequency distribution table. Which is the most common, and which is the rarest, blood group among these students?	5
36	The angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle , Prove it.	5