INDIAN SCHOOL SOHAR No. of pages: 6

PERIODIC TEST II (2022-23)

MATHEMATICS (041)

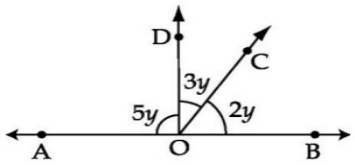
CLASS: IX **MAX. MARKS: 80**

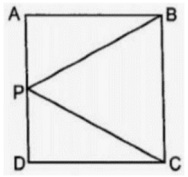
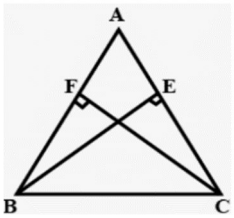
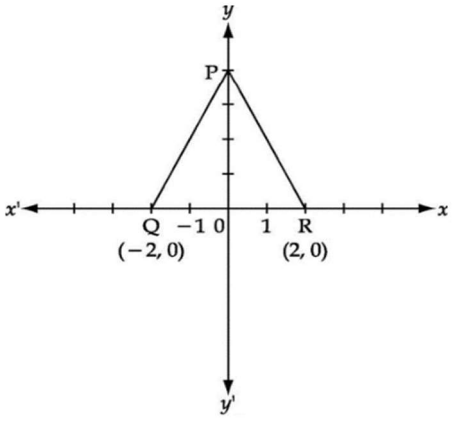
DATE: 25/9/22 **TIME ALLOWED: 3 HOURS**

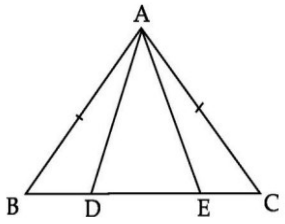
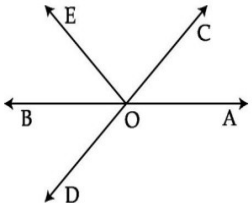
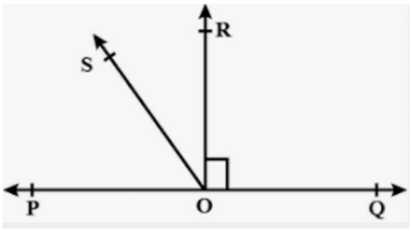
General Instructions:

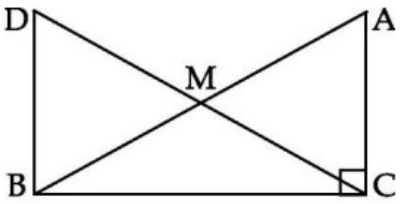
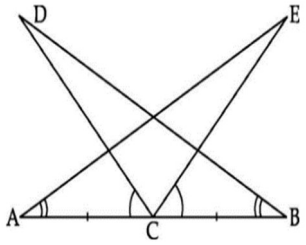
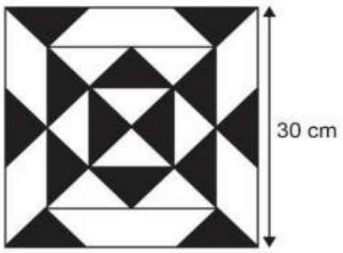
1. This Question Paper has 5 Sections A-E.
2. Section **A** has 20 MCQs carrying 1 mark each.
3. Section **B** has 5 questions carrying 02 marks each.
4. Section **C** has 6 questions carrying 03 marks each.
5. Section **D** has 4 questions carrying 05 marks each.
6. Section **E** has 3 case based integrated units of assessment (04 marks each) with sub-parts of the values of 1, 1 and 2 marks each respectively.
7. All Questions are compulsory. However, an internal choice in 2 Qs of 5 marks, 2 Qs of 3 marks and 2 Questions of 2 marks has been provided. An internal choice has been provided in the 2 marks Questions of Section E.
8. Draw neat figures wherever required.

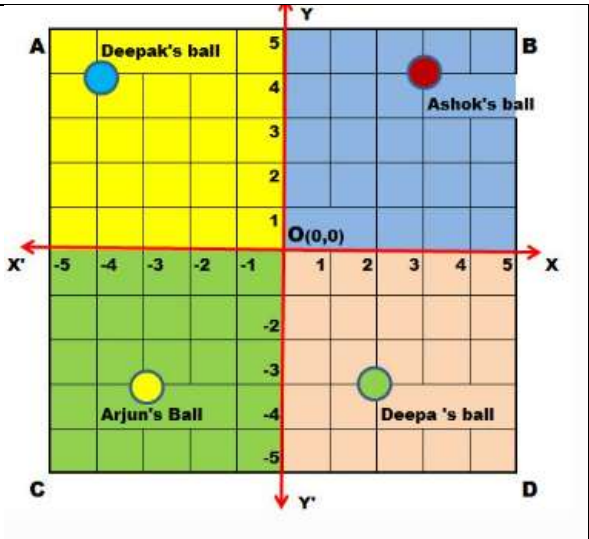
	SECTION A	
S.NO	**Section A consists of 20 questions of 1 mark each.**	**MARKS**
1.	When written in decimal form, which of the following will be a non-terminating, non-recurring number? (a) $1^{\frac{1}{9}}$ (b) $2^{\frac{1}{9}}$ (c) 2^{-9} (d) $9^{\frac{1}{2}}$	1
2.	A rational number between $\frac{5}{4}$ and 2 is (a) $\frac{13}{2}$ (b) $\frac{13}{4}$ (c) $\frac{13}{8}$ (d) $\frac{8}{13}$	1
3.	Area of an equilateral triangle of side 'a' units can be calculated by using the formula (a) $\sqrt{s^2(s-a)^2}$ (b) (s-a)$\sqrt{s^2(s-a)}$ (c) $\sqrt{s(s-a)^2}$ (d) (s-a)$\sqrt{s(s-a)}$	1
4.	The area of a triangle with sides 11 cm, 12 cm and 13 cm is (a) $6\sqrt{105}$ cm^2 (b) $12\sqrt{105}$ cm^2 (c) $60\sqrt{35}$ cm^2 (d) 12cm^2	1
5.	An isosceles right triangle has area 8cm^2, then length of its hypotenuse is (a) $\sqrt{32}$cm (b) $\sqrt{16}$cm (c) $\sqrt{48}$ (d) $\sqrt{24}$cm	1

6.	What is the ratio of the side of an equilateral triangle to its semi-perimeter? (a) 1:2 (b) 1:3 (c) 2:3 (d) 1:6	1
7.	The measure of an angle is five times its complement. What is the measure of the angle? (a) 25° (b) 35° (c) 65° (d) 75°	1
8.	$(-2-\sqrt{3})(-2+\sqrt{3})$ when simplified is (a) positive and irrational (b) positive and rational (c) negative and irrational (d) negative and rational	1
9	The length of each side of an equilateral triangle having an area of $9\sqrt{3}$cm^2 is (a) 8cm (b) 6cm (c) 36cm (d) 4cm	1
10	In which quadrant does point (-3,5) lie? (a) Ist (b) IInd (c) IIIrd (d) IVth	1
11	Which of the following is not a criterion for congruence of triangles? (a) SAS (b) ASA (c) SSA (d) SSS	1
12	In the figure, the value of y is (a) 18° (b) 140° (c) 40° (d) 56° 	1
13	In triangles ABC and DEF, AB = FD and ∠A = ∠D. The two triangles will be congruent by SAS axiom if (a) BC = FE (b) AC = DE (c) AC = EF (d) BC= DE	1
14	If x = 2 and y=1 is a solution of the equation 2x + 3k = y, then the value of k is (a) -1 (b) 2 (c) 1 (d) 3	1
15	The equation y = 4x - 7 has (a) no solution (b) unique solution (c) infinitely many solutions (d) exactly two solutions	1
16	The point whose ordinate is -3 and which lies on y-axis is (a) (-3,0) (b) (0,-3) (c) (1,-3) (d) (-3,-3)	
17	The angle which is twice its supplement is (a) 60° (b) 120° (c) 110° (d) 130°	1
18	What is the sum of the abscissa of the points (-1,4) and (-3, -5)? (a) -4 (b) -1 (c) 2 (d) 9	1
19	Which of these equations has (1.5,4) as one of the solutions? (a) 20x + 5y = 50 (b) 20x + 5y = 87.5 (c) 20x + 5y = 270 (d) 20x + 5y = 520	1
20	If AB = QR, BC = RP and CA = PQ, then (a) ΔABC ≅ ΔPQR (b) ΔCBA ≅ ΔPRQ (c) ΔBAC ≅ ΔRPQ (d) ΔPQR ≅ ΔBCA	1

	SECTION B	
	Section B consists of 5 questions of 2 marks each	
21	Give equations of two lines passing through (4, -3). How many more such lines are there?	2
22	ABCD is a square and P is the midpoint of AD. PB and PC are joined. Prove that ∠PCB = ∠PBC 	2
23	In ΔABC altitudes BE and CF to sides AC and AB are equal. Show that ΔABC is an isosceles triangle 	2
24	What is the value of $(256)^{0.16} \times (256)^{0.09}$ **OR** Which is smaller? $\sqrt[4]{10}$ or $\sqrt[3]{9}$ (Justify your answer)	2
25	Find whether $(\sqrt{2}, 3\sqrt{2})$ is a solution of x – 3y = 9 or not. **OR** If the point (4, -2) lies on the graph of 2x = ay + 3, then find the value of a.	2
	SECTION C	
	Section C consists of 6 questions of 3 marks each.	
26	Sides of a triangle are in the ratio 12: 17: 25 and its perimeter is 540cm. Find its area.	3
27	In the figure, ΔPQR is an equilateral triangle with coordinates of the vertices Q and R as (-2, 0) and (2,0). Find the coordinates of the vertex P. 	3
28	Locate $\sqrt{13}$ on the number line. **OR** Represent $\sqrt{5.2}$ on the number line	3

29	In an isosceles triangle ABC with AB = AC, D and E are points such that BE = CD. Show that AD = AE. 	3
30	Lines AB and CD intersect at O. If ∠BOD = 40° and ∠AOC + ∠BOE = 70°, find ∠BOE and reflex ∠COE  **OR** POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that ∠ROS = $\frac{1}{2}$ (∠QOS − ∠POS) 	3
31	Prove that the angles opposite to equal sides of a triangle are equal.	3
	SECTION D	
	Section D consists of 4 questions of 5 marks each.	
32	If a = $\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ and b = $\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$, find the values of a^2+b^2 - 5ab **OR** Rationalize the denominator $\frac{1}{\sqrt{7}+\sqrt{6}-\sqrt{13}}$	5
33	It is given that ∠ XYZ = 64° and XY is produced to point P. Draw a figure from the given information. If ray YQ bisects ∠ ZYP, find ∠ XYQ and reflex ∠ QYP	5
34	Prove that if in two triangles, two angles and the included side of one triangle are equal to two angles and the included side of another triangle, then the two triangles are congruent.	5

35	In right triangle ABC, right angled at C, M is the midpoint of hypotenuse AB. C is joined to M and produced to a point D such that DM = CM. Show that (i) ΔAMC ≅ ΔBMD (ii) ∠DBC is a right angle  **OR** AB is a line segment and C is its mip-point. D and E are points on the same side of AB such that ∠DBC = ∠EAC and ∠ECB = ∠DCA. Show that (i) Δ DBC ≅ ΔEAC (ii) DC = EC  	5
	SECTION E	
	Case study based questions are compulsory.	
36	The design of a square tile is made up of isosceles triangles. The side lengths of the triangles are 6cm, 6cm and 8cm. Use the information to answer the following questions.  (i) What is the area of the tile? (ii) What is the area of one triangle? (iii) How much area of the tile is black? **OR** Find the length of the altitude drawn to the side measuring 8cm in the triangle.	1 1 2
37	Two friends Rita and Priya simplified some expression during their revision hour and tried to explain to each other. Rita explains the simplification of $3\sqrt{45}$ -$\sqrt{125}$+$\sqrt{45}$ and Priya was finding the value of $\frac{1}{1+\sqrt{2}}$ after rationalizing and by putting $\sqrt{2}$ = 1.414 (i) What is the rationalising factor of the denominator of $\frac{1}{1+\sqrt{2}}$? (ii) What is the product of $3\sqrt{45}$ and $\sqrt{45}$? (iii) Simplify $3\sqrt{45}$ -$\sqrt{125}$+$\sqrt{45}$ **OR** Simplify and find the value of $\frac{1}{1+\sqrt{2}}$	1 1 2

38	Four children Ashok, Deepak, Arjun and Deepa are playing with balls in a square park. All four children roll their balls from centre point O.  (i) What are the coordinates of the point where Ashok's ball has stopped? (ii) What is the ordinate of the point where Deepa's ball has stopped?	1
	(iii) What is the equation of the coordinate axes?	1
	OR	
	What is the difference between the ordinates of the points where Arjun and Deepa's ball has stopped.	2