



INDIAN SCHOOL SOHAR
PERIODIC TEST II (2024-25)
MATHEMATICS (041)

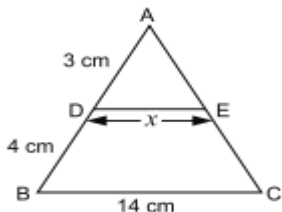
No. of printed pages: 5

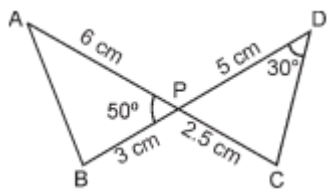
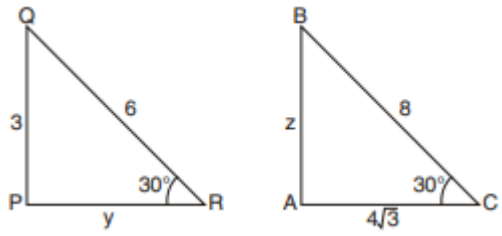
CLASS: X
DATE: 29/09/24

MAX. MARKS: 80
TIME: 3 HOURS

General Instructions:

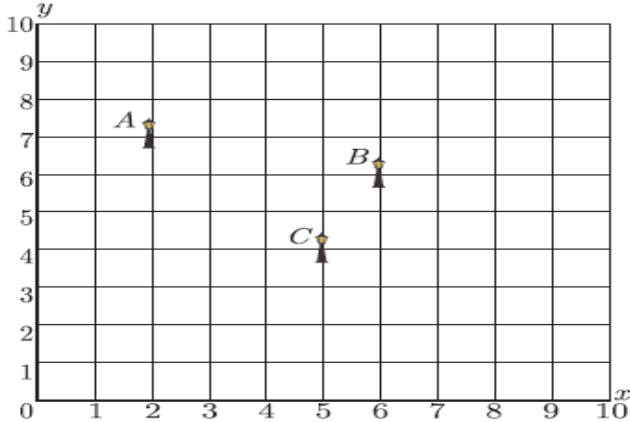
1. This Question Paper has 5 Sections A, B, C, D, and E.
2. Section A has 20 MCQs carrying 1 mark each.
3. Section B has 5 questions carrying 02 marks each.
4. Section C has 6 questions carrying 03 marks each.
5. Section D has 4 questions carrying 05 marks each.
6. Section E has 3 Case Based integrated 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 Questions of 2 marks, 2 Questions of 3 marks and 2 Questions of 5 marks has been provided. An internal choice has been provided in the 2 marks questions of Section E.
8. Draw neat diagrams wherever required.

SECTION A		
Section A consists of 20 questions of 1 mark each.		
Q. No		Marks
1	If p, q are two consecutive natural numbers, then HCF (p, q) is (a) q (b) p (c) 1 (d) pq	1
2	If $p - 1, p + 3, 3p - 1$ are in A.P, then find "p". (a) 4 (b) 3 (c) - 4 (d) 1	1
3	Find the tenth term of the A P $\sqrt{2}, \sqrt{8}, \sqrt{18}, \dots$ (a) $\sqrt{112}$ (b) $\sqrt{200}$ (c) $\sqrt{96}$ (d) $\sqrt{162}$	1
4	HCF and LCM of a and b are 19 and 152 respectively. If $a = 38$, then b is equal to (a) 152 (b) 19 (c) 38 (d) 76	1
5	The largest number which divides 71 and 126, leaving remainders 6 and 9 respectively is : (a) 1750 (b) 13 (c) 65 (d) 875	1
6	$7 \times 11 \times 13 \times 15 + 15$ is (a) prime number (b) composite number (c) co-prime (d) None of these	1
7	In figure, if $DE \parallel BC$ then x equals to  (a) 6 cm (b) 7 cm (c) 4 cm (d) 3 cm	1

8	If α, β are zeroes of the polynomial $f(x) = x^2 + px + q$, then polynomial having $\frac{1}{\alpha}$ and $\frac{1}{\beta}$ as its zeroes is: (a) $x^2 + qx + p$ (b) $x^2 - px + q$ (c) $qx^2 + px + 1$ (d) $px^2 + qx + 1$	1
9	The distance between the points $(\cos \theta, \sin \theta)$ and $(\sin \theta, -\cos \theta)$ is (a) $\sqrt{3}$ (b) $\sqrt{2}$ (c) 1 (d) 2	1
10	In the given figure, two-line segments, AC and BD intersect each other at the point P such that PA = 6 cm, PB = 3 cm, PC = 2.5 cm, PD = 5 cm, $\angle APB = 50^\circ$ and $\angle CDP = 30^\circ$. Then $\angle PBA$ is equal to:  (a) 50° (b) 30° (c) 60° (d) 100°	1
11	For what value of "k", do the equations $3x - y = -8$ and $-ky + 6x = -16$, represent coincident lines. (a) $k = 18$ (b) $k = -18$ (c) $k = -2$ (d) $k = 2$	1
12	If $\cos A = \frac{\sqrt{3}}{2}$, then find the value of $\tan A$. (a) $\frac{1}{\sqrt{3}}$ (b) Not defined (c) 1 (d) $\sqrt{3}$	1
13	If $\sec \theta - \tan \theta = \frac{1}{3}$, then the value of $(\sec \theta + \tan \theta)$ is (a) 1 (b) 2 (c) 3 (d) 4	1
14	Find the roots of the quadratic equation $y^2 + \frac{1}{2}y - 1 = 0$ (a) $\frac{1}{2}$ & -1 (b) 2 & -1 (c) 2 & 1 (d) None of these	1
15	The roots of $4x^2 + 4\sqrt{3}x + 3 = 0$ are (a) real and equal (b) real and unequal (c) not real (d) None of these	1
16	The pair of equations $y = 0$ and $y = -7$ has: (a) one solution (b) two solution (c) no solution (d) many solutions	1
17	In the figure $\triangle ABC \sim \triangle PQR$, then $y + z$ is:  (a) $2 + \sqrt{3}$ (b) $4 + 3\sqrt{3}$ (c) $4 + \sqrt{3}$ (d) $3 + 4\sqrt{3}$	1
18	If $(x + 1)$ is a factor of $x^2 - 3ax + 3a - 7$, then the value of a is: (a) 1 (b) 0 (c) -1 (d) -2	1
	Direction for questions 19 & 20: In question numbers 19 and 20, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct option.	

19	Assertion (A): The value of y is 6, for which the distance between the points P (2, - 3) and Q (10, y) is 10. Reason (R): Distance between two given points A (x_1, y_1) and B (x_2, y_2) is given, $AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A) (b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A) (c) Assertion (A) is true but Reason (R) is false. (d) Assertion (A) is false but Reason (R) is true.	1
20	Assertion (A): If n^{th} term of an AP is $7 - 4n$, then its common differences is - 4. Reason (R): Common difference of an AP is given by $d = a_{n+1} - a_n$	1
SECTION B		
Section B consists of 5 questions of 2 marks each.		
21	Five years ago, Nuri was thrice as old as Sonu. Ten years later, Nuri will be twice as old as Sonu. How old are Nuri and Sonu?	2
22	Show that the sum and product of two irrational numbers $(3 + \sqrt{2})$ and $(3 - \sqrt{2})$ are rational numbers. OR Prove that $3\sqrt{5} - 2$ is an irrational number if $\sqrt{5}$ is irrational	2
23	If a and b are the roots of the quadratic equation $x^2 - p(x + 1) - c = 0$, then find the value of $(a + 1)(b + 1)$.	2
24	Find the coordinates of a point on X-axis which is equidistant from (7, 6) and (-3, 4) OR Find the coordinates of a point on X-axis which divides the line segment joining the points (-2, -3) and (1, 6) in the ratio 1: 2	2
25	Find acute angles A and B, if $\sin(A + 2B) = \frac{\sqrt{3}}{2}$ and $\cos(A + 4B) = 0$ (if $A > B$)	2
SECTION C		
Section C consists of 6 questions of 3 marks each.		
26	Find the ratio in which the line $3x + y - 9 = 0$ divides the line segment joining the points (1, 3) and (2, 7)	3
27	Prove that the diagonals of a trapezium divide each other proportionally.	3
28	Solve for x and y: $\sqrt{2}x + \sqrt{3}y = 0$, $\sqrt{3}x - \sqrt{8}y = 0$. OR Solve for x and y: $139x + 56y = 641$ and $56x + 139y = 724$	3
29	Given that $\sin(A + B) = \sin A \cos B + \cos A \sin B$, find the value of $\sin 75^\circ$.	3
30	Solve for x: $\left(\frac{x}{x+1}\right)^2 - 5\left(\frac{x}{x+1}\right) + 6 = 0$.	3

31	If one zero of the polynomial $p(x) = (a^2 + 9)x^2 + 45x + 6a$ is reciprocal of the other, find the value of “a”. OR If the square of the difference of the zeroes of the quadratic polynomial $f(x) = x^2 + px + 45$ is equal to 144, find the value of p	3
	SECTION D	
	Section D consists of 4 questions of 5 marks each	
32	Find the AP whose first term is 5 and the sum of its first four terms is half the sum of the next four terms. OR The sum of first three terms of an A.P. is 33. If the product of the first and third term exceeds the second term by 29, find the A.P.	5
33	State and prove Thales theorem	5
34	If $\sqrt{3} \tan^2 A - 4 \tan A + \sqrt{3} = 0$, then find the value of $\cot^2 A + \tan^2 A$.	5
35	A railway half-ticket costs half the full fare but the reservation charges are the same on a half-ticket as on a full-ticket. one reserved full first-class ticket from station A to station B costs Rs. 2125. Also, one reserved a full first-class ticket and a half first- class ticket from A to B cost Rs.3200. Find the full fare from station A to B and also the reservation charges for a ticket. OR Father’s age is 3 times the sum of the ages of his two children. After 5 years his age will be twice the sum of ages of two children. Find the age of father.	5
	SECTION E	
	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.	
36	Case Study – 1 In the month of April to June 2022, the exports of passenger cars from India increased by 26% in the corresponding quarter of 2021–22, as per a report. A car manufacturing company planned to produce 1800 cars in 4th year and 2600 cars in 8th year. Assuming that the production increases uniformly by a fixed number every year  Based on the above information answer the following questions (i) Find the production in the 1st year. (ii) Find the production in the 12th year. (iii) Find the total production in first 10 years. OR (iii) In which year the total production will reach to 15000 cars?	1 1 2

37.	Case Study – 2 Resident Welfare Association (RWA) in a city in Delhi have installed three electric poles A, B and C in a society's common park. Despite these three poles some parts of the park are still in dark. So RWA decides to have one more electric pole D in the park. The Park can be modelled as a coordinate system given below  (i) Find the distance of the pole B from the corner O of the park. (ii) Find the distance between the poles A and C. (iii) Find the position of the fourth pole D so that A, B, C, D forms a parallelogram. OR (iii) Find the position of the fourth pole D, if D has to be fixed exactly half way between the line segment joining the poles A and B.	1 1 2
38	Case Study – 3 The below picture is a natural example of parabolic shape which is represented by a quadratic polynomial. A parabolic arch is an arch in the shape of a parabola. In structures, their curve represents an efficient method of load, and so can be found in bridges and in architecture in a variety of forms.  (i) What is the standard form of a quadratic polynomial? (ii) Write the condition of "a" when the graph of the quadratic polynomial opens downwards. (iii) If α and $\frac{1}{\alpha}$ are the zeros of a quadratic polynomial $2x^2 - x + 8k$ then find "k" OR (iii) Find a quadratic polynomial, the sum and product of whose zeroes are -8 and 12 respectively	1 1 2

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