

MANAV RACHNA INTERNATIONAL SCHOOL
MAYFIELD GARDENS, SECTOR-51, GURUGRAM
SUMMATIVE ASSESSMENT – I (PA II) (2026-27)
GRADE – IX
SUBJECT – MATHEMATICS (041)

Date: 17.09.2026
Time Allowed: 03 Hours

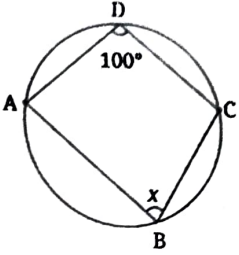
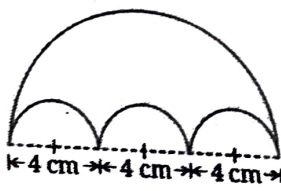
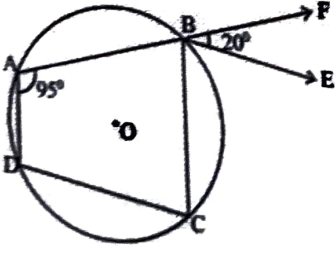
Maximum Marks: 80

General Instructions:

- This Question Paper has 5 Sections A-E.
- Section A has 20 MCQs carrying 1 mark each
- Section B has 5 questions carrying 02 marks each.
- Section C has 6 questions carrying 03 marks each.
- Section D has 4 questions carrying 05 marks each.
- Section E has 3 case based integrated units of assessment (04 marks each) with subparts of the values of 1, 1 and 2 marks each respectively.
- 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 one part of Section E
- Draw neat figures wherever required. Take $\pi = 22/7$ wherever required if not stated.

Q. No	SECTION A Section A consists of 20 questions of 1 mark each.	Marks
1.	A point P lies in Quadrant II and is equidistant from both coordinate axes. Which of the following can be its coordinates? (a) (5, 5) (b) (-6, -6) (c) (-4, 4). (d) (4, -4)	1
2.	Which polynomial is linear? (a) $5x - 7$ (b) $3x^3 - 2$ (c) $x^2 + 3$ (d) $x^4 + 1$	1
3.	If $\sqrt{18} = a\sqrt{2}$, then the value of a^2 is (a) 3 (b) 9 (c) 6 (d) 18	1
4.	A point is 6 units from the x-axis and 8 units from the y-axis. How many different points satisfy the condition? (a) 1 (b) 2 (c) 3 (d) 4	1
5.	A student marks the point (x, y) by moving 3 units left and 5 units up from the origin. Then (x, y) is (a) (-5, 3) (b) (-3, 5) (c) (5, -3) (d) (3, -5)	1
6.	If $a + b = 12$ and $ab = 20$, then $a^2 + b^2$ equals (a) 104 (b) 124 (c) 114 (d) 164	1
7.	Two equal chords of the same circle are at distances 5 cm and x cm from the centre. Then (a) $x > 5$ (b) $x < 5$ (c) $x = 5$ (d) cannot be determined	1
8.	If $p(x) = 2x + 5$, then $p(-4) =$ (a) -13 (b) 13 (c) -3 (d) 3	1

9.	Which of the following is irrational? (a) 0.25252525.... (c) $\frac{-5}{8}$	(b) $\sqrt{7}$ (d) $\sqrt{121}$	1
10.	If the perimeter of an equilateral triangle is 180 cm. Then its area will be (a) 900 cm^2 (b) $900\sqrt{3} \text{ cm}^2$ (c) $300\sqrt{3} \text{ cm}^2$ (d) $600\sqrt{3} \text{ cm}^2$		1
11.	The fifth term of an AP is 23 and the ninth term is 39. The first term is (a) 3 (b) 5 (c) 7 (d) 9		1
12.	The common difference of AP: 7, 11, 15, 19, ... is (a) $\frac{7}{11}$ (b) 4 (c) -4 (d) $\frac{11}{7}$		1
13.	If $x^2 + kx + 6 = (x+2)(x+3)$ for all k , find the value of k . (a) -1 (b) 1 (c) 3 (d) 5		1
14.	A chord is moved closer to the centre of a circle. Its length will (a) decrease (b) remain the same (c) increase (d) first increase then decrease		1
15.	The perimeter of a sector of a circle whose central angle is 90° and radius 7 cm is (a) 35 cm (b) 11 cm (c) 22 cm (d) 25 cm		1
16.	The circumference of a circle doubles. Its area becomes (a) Double (b) Four times (c) Half (d) Eight times		1
17.	The sequence 2, 6, 18, 54, ... is (a) Arithmetic (b) Geometric (c) Neither (d) Constant		1
18.	To solve $(99)^2$ which of the following is relevant identity: (a) $a^2 - b^2$ (b) $(a-b)^2$ (c) $a^2 + b^2$ (d) $(a-b)^3$		1
	Questions number 19 and 20 are Assertion and Reason based questions. Two statements are given, one labelled as Assertion (A) and the other labelled as Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below. (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.		
19.	Assertion (A): The midpoint of every diameter is the centre of the circle. Reason (R): Every diameter passes through the centre of the circle.		1
20.	Assertion (A): Every irrational number has a non-terminating, non-repeating decimal expansion. Reason (R): Every non-terminating decimal is irrational.		1

SECTION B		
Section B consists of 5 questions of 2 marks each.		
21.	A chess club charges ₹200 joining fee and ₹50 per match. Form the equation and find the amount payable for 12 matches. OR A farmer cuts a 300 feet fence into two pieces of different sizes. The longer piece is four times as long as the shorter piece. How long are the two pieces?	2
22.	The first term of an AP is 12 and the 8th term is 40. Find the common difference.	2
23.	Find 'x' in the given figure. 	2
24.	The radius of a circle is increased from 14 cm to 21 cm. Find: i. Increase in circumference ii. Increase in area [Take $\pi = \frac{22}{7}$] OR Find the perimeter of the given shape 	2
25.	In the given figure, ABCD is a cyclic quadrilateral in which AB is extended till F and BE DC. If $\angle FBE = 20^\circ$ and $\angle DAB = 95^\circ$, then find $\angle ADC$. 	2
SECTION C		
Section C consists of 6 questions of 3 marks each.		
26.	A telecom company has a linear relationship between the bill generated and the data (in GB) used, by the equation $y = 20x + 150$. Find: i. Bill for 18 GB data ii. Bill for 25 GB data iii. What is the slope and constant of the equation?	3

27.	Represent the rational numbers $\frac{2}{3}$, $-\frac{5}{4}$ and $1\frac{1}{2}$ on a single number line. OR Without performing division, determine whether the decimal expansion of $\frac{18}{125}$ is terminating or non-terminating. If it terminates, state the number of decimal places. <u>3</u>	3
28.	Show that the points A(7,10), B(-2,5) and C(3,-4) are vertices of an isosceles right triangle. <u>Right angled</u>	3
29.	Using suitable identity, evaluate $(103)^2 - (97)^2$ <u>1000</u> OR Write in expanded form $(x - \frac{1}{2}y + \frac{1}{3}z)^2$.	3
30.	The perimeter of a square is equal to the circumference of a circle of radius 14 cm. Find the side of the square. [Take $\pi = \frac{22}{7}$].	3
31.	Find the 12th term of a GP with common ratio 2, whose 8th term is 192.	3
SECTION D Section D consists of 4 questions of 5 marks each.		
32.	i. Prove that $\sqrt{5}$ is an irrational number. ii. Convert $0.\overline{23}$ in $\frac{p}{q}$ form. <u>$\frac{23}{99}$</u>	5
33.	i. If you have ₹800 and you save ₹250 every month, find the amount you have after (i) 6 months (ii) 2 years. Express this as a linear pattern. ii. Draw the graphs of the following sets of lines: $y = 3x - 1$, $y = 3x$ and $y = 3x + 1$ OR i. Draw the graphs of the following sets of lines: $y = -2x - 3$, $y = -2x$ and $y = 2x + 3$ ii. A gym charges a fixed monthly fee and an additional cost per hour for using the badminton court. A student using the gym observed that when she used the badminton court for 10 hours, her bill was ₹800. When she used it for 15 hours, her bill was ₹1100. If the monthly bill y depends on the number of hours of the use of the badminton court, x, according to the relation $y = ax + b$, find the values of a and b.	(2+3) (3+2)
34.	i. Simplify: $(2x-5y)^3 - (2x+5y)^3$. ii. If a number plus its reciprocal equals $\frac{10}{3}$, find the numbers. <u>$3\frac{1}{3}$</u>	(3+2)
35.	i. Draw $\triangle ABC$ with $AB = 5$ cm, $\angle A = 100^\circ$, $AC = 4$ cm. Draw the circumcircle of $\triangle ABC$. Is the centre inside or outside the triangle. ii. In a circle with centre O, the central angle AOB is 60°. If the radius of the circle is 12 cm, what is the length of the chord AB? OR i. Quadrilateral PQRS is inscribed in a circle. If $\angle P = (2x+10)^\circ$ and $\angle R = (3x-20)^\circ$, find the value of x and the measures of $\angle P$ and $\angle R$. ii. The distance of a chord of length 16 cm from the centre of a circle is 6 cm. Find the radius of the circle.	(3+2) (2+3)

SECTION E		
Case study based questions are compulsory.		
36.	The vertices of a quadrilateral are $A(-4, 5)$, $B(6, 5)$, $C(6, -3)$ and $D(-4, -3)$. - Name the quadrilateral formed. - Find its length and breadth. - Find its perimeter. OR - Find its area.	1+1+2
37.	In an annual day function of a school, the organizers wanted to give a cash prize along with a memento to their best students. Each memento is made with its base as ABCD having silver plating in the front side as shown in the figure. The rate of silver plating is ₹ 20 per cm^2. Based on the above, answer the following questions: - What is the area of the quadrant ODCO? - Find the area of $\triangle AOB$. - What is the total cost of silver plating the shaded part ABCD? OR - What is the length of arc CD?	1+1+2
38.	In investigating different job opportunities, you find that firm A will start you at ₹25,000 per year and guarantee you a raise of ₹1,200 each year whereas firm B will start you at ₹28,000 per year but will guarantee you a raise of only ₹800 each year. - Over a period of 15 years, how much would you receive from firm A? - Over a period of 15 years, how much would you receive from firm B? - What would be your annual salary at firm A for the tenth year? OR - What would be your annual salary at firm B for the tenth year?	1+1+2