



INDIAN SCHOOL AL WADI AL KABIR
Pre-Mid-Term Examination (2023-24)

Class: IX
Date:28-05-23

Sub: MATHEMATICS

Max Marks: 30
Time:1 hour

General Instructions:

1. This question paper has 5 sections- A - D.
2. Section A- PART-1 (MCQ) comprises of 6 questions of 1 mark each.
3. Section A- PART-2 (Assertion and Reason) comprises of 1 question of 1 mark each.
4. Section B comprises of 3 questions of 2marks each.
5. Section C comprises of 3 questions of 3 marks each.
6. Section D comprises of 2 Case based integrated units of assessment (4 marks each) with sub-parts of the values 2, 1 and 1 marks each respectively.
7. All questions are compulsory. However, an internal choice in 1 Q of 2 marks, 1 Q of 3 marks has been provided. An internal choice has been provided in the 2 marks questions of section D.

Section A

PART-1(MCQ-1 mark each)

Q.1.	Find the side of an equilateral triangle of Area $64\sqrt{3} m^2$.							
	A	8m	B	16m	C	24m	D	32m
Q.2.	If $\sqrt{2} = 1.414$, then find the value of $\frac{1}{\sqrt{2}+1}$.							
	A	0.414	B	0.412	C	1	D	0.514
Q.3.	Given three sticks of lengths 10cm, 5cm and 7cm. A triangle is formed using the sticks, then area of the triangle will be.							
	A	$2\sqrt{56} cm^2$	B	$4\sqrt{66} cm^2$	C	$26\sqrt{6} cm^2$	D	$2\sqrt{66} cm^2$
Q.4.	Find $17\sqrt{2} + 5\sqrt{2} - 10\sqrt{5}$.							
	A	$22\sqrt{2} - 10\sqrt{5}$	B	$12\sqrt{2} - 10\sqrt{5}$	C	$2\sqrt{2} - 10\sqrt{5}$	D	$12\sqrt{5}$
Q.5.	Two sides of a triangle are 13cm and 14cm and its semi-perimeter is 18cm. Find the third side of this triangle.							
	A	18cm	B	9cm	C	8cm	D	19cm
Q.6.	Simplify: $(4\sqrt{3} - \sqrt{5})^2$.							
	A	$53 + 8\sqrt{15}$	B	$3\sqrt{3}$	C	$53 - 8\sqrt{15}$	D	$55 - 8\sqrt{5}$

Section A

PART-2 ASSERTION AND REASON TYPE QUESTIONS (1 mark each)

DIRECTION: A statement of **Assertion (A)** is followed by a statement of **Reason (R)**.

Choose the correct option.

- (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 and 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.

Q.7.

Assertion(A): $6\sqrt{2}+7\sqrt{2}$ is a rational number.

Reason(R): The sum of every rational and irrational number is irrational.

Section B (2 marks each)

Q.8.

Find any two irrational numbers between $\frac{5}{11}$ and $\frac{4}{19}$.

Q.9.

Rationalise the denominator $\frac{30}{5\sqrt{3}-3\sqrt{5}}$.

(OR)

Simplify $\frac{\sqrt{32}-\sqrt{48}}{\sqrt{8}-\sqrt{12}} + \frac{\sqrt{32}+\sqrt{48}}{\sqrt{8}+\sqrt{12}}$

Q.10.

Find the area of a right triangle whose base and hypotenuse are 15cm and 17cm.

Section C (3 marks each)

Q.11.

Represent $\sqrt{8.5}$ on the number line.

Q.12.

The perimeter of a triangular plot is 540m and its sides are in the ratio 25: 17: 12. Find the area of the triangular plot.

Q.13.

Find the values of a and b, if $\frac{7+2\sqrt{5}}{7-2\sqrt{5}} = a + \sqrt{5} b$

(OR)

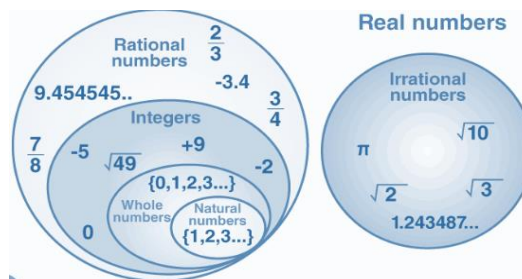
If $x = 3 + 2\sqrt{2}$, find the value of $x^2 + \frac{1}{x^2}$.

Section D

(CASE STUDY BASED QUESTIONS – 4 MARKS EACH)

Q.14. CASE STUDY BASED-I

Any real number that cannot be expressed as the quotient of two integers—that is, p/q , where p and q are both integers. For example, there is no number among integers and fractions that equals Square root of $\sqrt{2}$. A counterpart problem in measurement would be to find the length of the diagonal of a square whose side is one unit long; there is no subdivision of the unit length that will divide evenly into the length of the diagonal. It has become necessary, early in the history of mathematics, to extend the concept of number to include irrational numbers. Irrational numbers such as π can be expressed as an infinite decimal expansion with no regularly repeating digit or group of digits. Irrational and rational numbers together form the real numbers.



(i) Write the decimal which represents the fraction $\frac{4}{27}$ and identify the type of decimal expansion. (1 m)

(ii) Find the least rationalising factor of $\frac{1}{\sqrt{180}}$ (1 m)

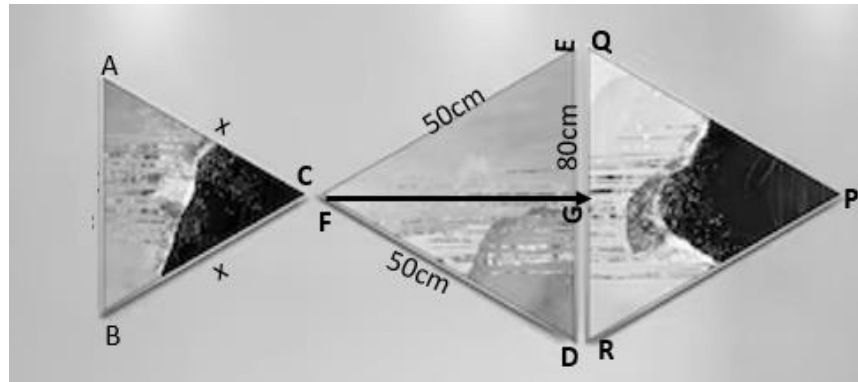
(iii) Simplify $(\sqrt{11} + 2\sqrt{7})(3\sqrt{11} - \sqrt{7})$ (2 m)

OR

Express $5.232323\dots$ in the form p/q , where p and q are integers and $q \neq 0$.

Q.15. CASE STUDY BASED-II

Wall Art can be defined as art pieces or artistic expressions used to accessories the walls. The term Wall Art covers many things under its umbrella ranging from murals to paintings, photo frames and 3D wall sculptures. Wall is one of the most important blocks of any house. However, people do not give wall art the due importance it deserves. Instead, people think about it much later after completing the house. It is not given any thought at all. However, this underrated aspect of modern housing accentuates the features of any house, no matter the size. A triangular colourful scenery is made in a wall with sides 50cm, 50cm and 80 cm, A golden thread is to hang from the vertex so as to just reach the side 80cm.



- (i) Find the length of AB and AC, if the ratio of equal side to unequal side is 3: 2 and perimeter of the triangle is 16cm? (1m)
- (ii) The wall art is bordered with a colourful thread. If the cost of the thread is ₹15.75 per.cm. Find the cost of the thread required to give a border of the triangular design ABC and DEF. (1 m)
- (iii) What is the height of the triangle corresponding to the base 80cm of the triangle DEF. (2 m)

(OR)

Find the area of the triangular design ABC.