ROLL NO. ☐☐☐☐☐☐☐

DAV PUBLIC SCHOOLS, ODISHA ZONE

PA-II/HALF YEARLY EXAMINATION (2023-24)

➢ Check that this question paper contains **FOUR** printed pages.

➢ Check that this question paper contains **40** questions..

➢ Write down the serial number of the question in the left side of the margin before attempting it.

CLASS – VII
MATHEMATICS

Time allowed: 3 Hours   **M. M: 80**

General Instructions:

- This question paper contains 4 sections: **A**, **B**, **C** & **D**.
- **Section-A** consists of **10 MCQs, 5 Fill in the blanks and 5 VSA of 1 mark** each.
- **Section-B** consists of **6 SA−I** type questions of **2 marks** each.
- **Section-C** consists of **8 SA−II** type questions of **3 marks** each.
- **Section-D** consists of **6 Long Answer** (LA) type questions of **4 marks** each.
- Internal choice is provided in 2 questions of 2 marks, 3 questions of 3 marks and 2 questions of 4marks.
- Verify all the answers thoroughly before submission.

SECTION-A   [1× 10]

Select the correct option.

1. The value of x such that $\frac{-3}{8}$ and $\frac{x}{-24}$ are equivalent rational numbers is-
   a) 64   b) -64   c) -9   d) 9

2. Identity element for multiplication of rational numbers is
   a)1   b) 0   c) -1   d) does not exist

3. The multiplicative inverse of $6\frac{1}{3}$ is-
   a) $-\frac{19}{3}$ b) $-\frac{3}{19}$ (c) $\frac{3}{19}$ d) $\frac{19}{3}$

4. The fraction $\frac{5}{20}$ is equal to
   a)25%   b) 45%   c)40%   d) 20%

5. If P = ₹1000, R = 20 %, T = 2 years then, SI is equal to-
   a) ₹800   b) ₹400   c) ₹300   d) ₹200

6. $x + x + x + x + x =$ _____.
   a) x^5 b) $5x$ c) x d)$5x^5$

7. If $4x - 3 = 21$, what is the value of $(3x - 5)$?
   a) 16   b) 14   c) 13   d) 15

8. Which among the following is not an element of Δ PQR?
   a) ∠ P   b) ∠ R   c) RQ   d) ∠ QOR
9. The point of concurrence of the medians of a triangle is called
   a) Orthocentre   b) Incentre   c) Centroid   d) Circumcentre
10. In ΔABC, AB + BC > _____ .
   a) AB   b) BC + AC   c) AC   d) none

Fill in blanks: [1× 5]

11. The solution of the equation $3x - 7 = 7 - 4x$ is _____ .
12. The centroid of a triangle divides each median in the ratio _____ .
13. Profit or loss always calculated on _____ .
14. Every triangle has at least _____ acute angle (s).
15. The degree of the linear equation in one variable is _____ .

Answer the following questions. [1× 5]

16. The length of two sides of a triangle is 9cm and 2cm. What is the possible length of the third side?
17. Find the value of 40 % of 120 km.
18. If $\frac{x}{5}$ = -3 then, find the value of $\frac{2x}{3}$.
19. Find the sum of $-\frac{3}{11}$ and $-\frac{2}{7}$.
20. Express $\frac{90}{216}$ as rational number with numerator 5.

SECTION-B [2× 6]

21. Represent $4\frac{1}{3}$ and $-\frac{27}{4}$ on a number line.
22. Find the reciprocal of $\frac{4}{5} \times (\frac{3}{-8})$.
23. Simplify and express the result in the decimal form
   $\frac{1}{5} + \frac{3}{10} + \frac{4}{25}$

   OR

   Without actual division, determine if $-\frac{28}{250}$ is terminating or non-terminating decimal number.

24. (a) Express 3.25 % as decimal.
   (b) Convert 2 : 5 into per cent.
25. If the mean of 7, 4, x, and 10 is 8, find the value of x.
26. Find a number whose double is 45 greater than its half.

   **OR**

   Solve the equation $3x + \frac{1}{5} = 2 - x$

SECTION-C [3× 8]

27. Find the mean, median and mode of the given data.
   35, 32, 35, 42, 35, 32, 34

   OR

   The mean of eight observations was found to be 57. Later on, it was discovered that an observation 48 was misread as 84. Find the correct mean of the observation.

28. Two equal sides of an isosceles triangle are each 2 cm more than thrice the third side. If the perimeter of triangle is 67 cm, find the length of its sides.

29. In the given figure, find the measures of ∠1, ∠2, ∠3.
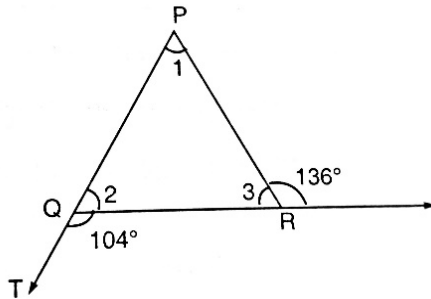
30. The length of two sides of a right triangle are equal. The square of the hypotenuse is 800 cm^2. Find the length of each side.

31. At what rate per cent will ₹1500 amount to ₹2400 in four years?

OR

Find the sum of money that amounts to ₹ 5850 in six years at 5 % per annum.

32. Simplify and express the result as a rational number in its lowest form.

$$\frac{0.144 \div 1.2}{0.016 \div 0.02} + \frac{7}{5} - \frac{21}{8}$$

33. Arrange the rational numbers $\frac{4}{-9}, \frac{-5}{6}, \frac{7}{-8}$ in descending order.

34. Divide the sum of $\frac{5}{21}$ and $\frac{4}{7}$ by their difference.

OR

A drum of kerosene oil is $\frac{3}{4}$ full. When 15 litres of oil is drawn from it, it is $\frac{7}{12}$ full. Find the total capacity of the drum.

SECTION-D [4× 6]

35. By taking $x = -\frac{5}{3}, y = \frac{2}{7}$ and $z = \frac{1}{-4}$, verify that-

$(x + y) \div z = x \div z + y \div z$

36. Perimeter of a rectangle is 2.4 m less than $\frac{2}{5}$ of the perimeter of a square. If the perimeter of the square is 40 m, find the length and breadth of the rectangle given that breadth is $\frac{1}{3}$ of the length.

37. Solve the following equation and check your answer.

$$4(2y - 3) + 5(3y - 4) = 14$$

38. A man buys two pens at ₹ 20 each. He sells one at a gain of 5 % and other at a loss of 5 %. Find his gain or loss per cent.

OR

Rahul buys an almirah for ₹ 2000 and spends ₹ 400 as its transportation charge. If he sells the almirah for ₹ 3000, determine his profit per cent.

39. In the given figure, AE = AC, $\angle BAC = 40^0$, $\angle ACF = 75^0$ and BCF is a line. Prove that BE = CE.
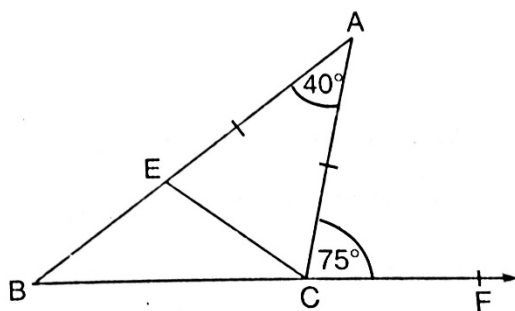
OR

A point 'O' is in the interior of triangle ABC. Show that.

$$2(OA + OB + OC) > AB + BC + AC$$

40. In a public library, the following observations were recorded by the librarian in a particular week. Represent this information in the form of a bar graph choosing an appropriate scale.

Days	Mon	Tues	Wed	Thurs	Fri	Sat
Newspaper reader	400	600	350	500	550	350