RI Term-2 EXAM 2024

1. Consider the set of numbers below.

$$4.\dot{1},\ 53,\ 46,\ \left(-\frac{1}{3}\right)^2,\ 5\pi,\ (-7)^2,\ \frac{\sqrt{11}}{5}$$

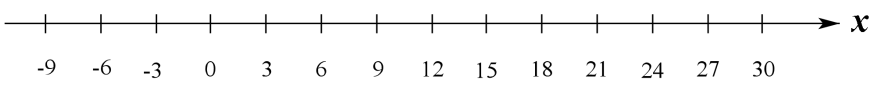
List the number(s) that are

(i) irrational numbers, [1]

(ii) composite numbers. [1]

2. Using a calculator, evaluate $\dfrac{\left(\frac{2}{3}\right)^3 - \pi \times \left[\frac{5}{4} - (-0.327)^2\right]}{\sqrt[3]{-231} \times 2.19}$, giving your answer correct to 2 decimal places. [1]

3. Represent all real numbers in the range $-6 < x \leq 27$ on the number line below. [2]



4. Without the use of a calculator, evaluate $-\left(-\frac{1}{2}\right)^3+\sqrt{5\frac{4}{9}}\div\left[-\frac{1}{4}+\frac{1}{5}\div\frac{4}{33}\right]$. Show all your working clearly. [3]

5. Given that $a=3, b=-2, c=5$ and $d=-7$, evaluate $\frac{3(a+b)^2-2(d+2c)^3}{5\sqrt[3]{d^2-b^2c-2}}$. [2]

6. Rose bought 3 Rush Taylor concert tickets at $\$(52y-62x)$ each, $(5y-6x)$ tickets at \$148 each, and $(4x-3y)$ tickets at \$128 each.

(i) Write down and simplify an expression, in terms of x and y, for the total cost of all the tickets bought. [3]

(ii) Given that $x=7$ and $y=12$, calculate the total cost for all the tickets. [1]

7. Given that $\sqrt[3]{2.841}=1.416$, $\sqrt[3]{28.41}=3.051$ and $\sqrt[3]{284.1}=6.574$, find the value of $\sqrt[3]{2841}$ without the use of calculator. [2]

8. Given the lowest common multiple of x and 180 is 3960.

(i) Express 3960 as a product of its prime factors. [1]

(ii) Given that $180 = 2^2 \times 3^2 \times 5$. Find the smallest possible integer value of x. [2]

(iii) Find the smallest positive integer value of p such that $3960p$ is a perfect square. [1]

9. A primary school has 240 students in Primary 4, 260 students in Primary 5 and 300 students in Primary 6. The school wants to arrange the students in each level into the largest possible groups for a learning journey, with each group having the same number of students. What is the largest number of students they can have in each group? [3]

10. A 7-digit number is represented by 77X4Y5Z .

If this number is divisible by 12, using the tests of divisibility, find the smallest possible 7-digit number. [3]

11. A rectangular plot of land has a perimeter of $\left(12x^3+4x^2+2x-6\right)$ m and width of $\left(2x^3+4x-4\right)$ m.

(i) Find an expression for the length of the plot of land in terms of x. Simplify your answer. [2]

(ii) Hence, find the area of the rectangular plot of land if $x=3$. [2]