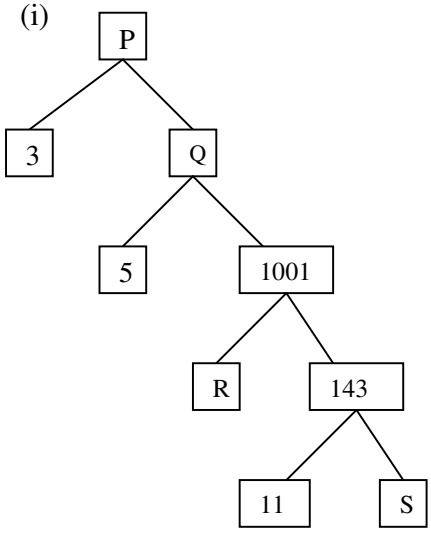
OUR OWN HIGH SCHOOL, AL WARQA'A, DUBAI

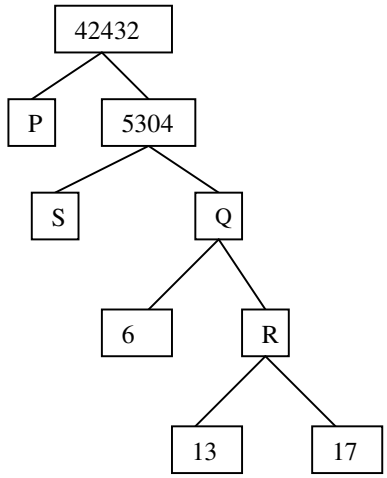
GRADE: X NUMBER SYSTEMS

1. Define Euclid's division lemma, Euclid's division algorithm and Fundamental theorem of arithmetic.
2. Using prime factorisation method find the HCF and LCM of:
   (i) 144, 198 (ii) 24, 36, 40 (iii) 30, 72, 432
3. Using Euclid's division algorithm to find the HCF of :
   (i) 1648, 4052 (ii) 1260, 7344 (iii) 396, 1080
4. Explain why (i) $7 \times 11 \times 13 + 13$ (ii) $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$
   (iii) $11 \times 13 \times 17 + 17$ are composite numbers.
5. Find the missing numbers in the factor trees:

(i)



(ii)



6. Check whether the numbers 8^n and 15^n, where n is a natural number can end with the digit zero.
7. Prove that $\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$, $\sqrt{11}$ are irrational numbers.
8. Show that ($3\sqrt{2}$, $\frac{1}{\sqrt{13}}$, $6+\sqrt{5}$, $2-\sqrt{3}$, $\frac{3}{2\sqrt{5}}$ are irrational numbers.
9. Show that the square of any odd integer is of the form $6q+1$ or $6q+3$ or $6q+5$, where q is some integer.
10. Prove that the square of any positive integer is of the form $4q$ or $4q+1$ for some integer q.
11. Two tankers contain 850 litres and 680 litres of petrol respectively. Find the maximum capacity of a container which can measure the petrol of either tanker in exact number of times.
12. The length, breadth and height of a room are 8 m 25 cm, 6 m 75 cm and 4 m 50 cm respectively. Determine the length of the longest rod which can measure the three dimensions of the room exactly.
13. What is the smallest number that, when divided by 35, 56 and 91 leave the remainder of 7 in each case.
14. Write down the decimal expansion of the rational numbers which have terminating decimal expansion:
    (i) $\frac{1111}{7^4 \times 13^2}$ (ii) $\frac{52}{2^3 \times 5^4}$ (iii) $\frac{14588}{625}$ (iv) $\frac{129}{2^2 \times 5^7}$