Time: 1 hour **Marks: 25**

Section A (Questions 1 to 5 carry 1 mark each)

1. Find a rational number between $\sqrt{2}$ and $\sqrt{3}$. **(1)**

2. Express 429 as product of its prime factors. **(1)**

3. Write whether the rational number $\dfrac{7}{75}$ will have a terminating decimal expression or a non-terminating repeating decimal expansion. **(1)**

4. Find after how many places of decimals the decimal form of the number $\dfrac{27}{2^3 5^4 3^2}$ will terminate. **(1)**

5. Can two numbers have 16 as their HCF and 380 as their LCM? Give reason. **(1)**

Section B (Questions 6 to 12 carry 2 marks each)

6. Use Euclid's Division Algorithm to find the HCF of 1260 and 7344. **(2)**

7. Two positive integers can be written as $a = x^3 y^2$ and $b = xy^3$, where x and y are prime numbers. Find LCM of (a,b). Also verify HCF(a,b) x LCM (a,b) = ab **(2)**

8. Show that every positive odd integer is of the form (4q+1) or (4q+3), where q is some integer. **(2)**

9. On a morning walk, three persons step out together and their steps measure 30 cm, 36 cm and 40 cm respectively. What is the minimum distance each should walk so that each can cover the same distance in complete steps. **(2)**

10. If the HCF of 65 and 117 can be written in the form 65n -117, then find the value of n. **(2)**

11. Find the largest number which on dividing 1251, 9377 and 15628 leaves remainders 1, 2 and 3 respectively. **(2)**

12. Prove that $\sqrt{3}$ is an irrational number. **(2)**

Section C (Questions 13 & 14 carry 3 marks each)

13. Prove that $\dfrac{2 + \sqrt{3}}{5}$ is an irrational number, given that $\sqrt{3}$ is an irrational number. **(3)**

14. During a sale, colour pencils were being sold in packs of 24 each and crayons in packs of 32 each. If you want full packs of both and the same number of pencils and crayons, how many of each would you need to buy? **(3)**

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