Time : 1 Hour 30 Minute

STD 10 Maths
Chapter Based Test

Total Marks : 50

Section A

* **Choose the right answer from the given options. [1 Marks Each]**   **[7]**

1. Choose the correct answer from the given four options in the following questions:

   For some integer m, every even integer is of the form:
   - a. m.
   - b. m + 1.
   - c. 2m.
   - d. 2m + 1.

2. If HCF (72, 120) = 24, then LCM (72, 120) is

   (A) 240   (B) 360   (C) 1728   (D) 2880

3. If p is a prime number, then $\sqrt{p}$ is

   (A) Irrational   (B) Prime number   (C) Rational   (D) Integer

4. Which of the following statement is false?
   - A.   H.C.F (p, q, r) × LCM (p, q, r) = p × q × r
   - B.   LCM (p, q, r) = p × q × r; if p, q, r are prime numbers
   - C.   HCF (p, q, r) = 1; if p, q, r are prime numbers
   - D.   HCF(a, b) × LCM (a, b) = a × b

   (A) (C)   (B) (A)   (C) (B)   (D) (D)

5. The difference of a rational and an irrational number is always:

   (A) an irrational number   (B) a rational number   (C) None of these   (D) an integer

6. $0.\overline{68} + 0.\overline{73} =?$
   - a. $1.\overline{41}$
   - b. $1.\overline{42}$
   - c. $0.\overline{141}$
   - d.   None of these.

7. What is the largest number that divides 70 and 125, leaving remainders 5 and 8 respectively?
   - a.   13
   - b.   9
   - c.   3
   - d.   585

   [3]

*   A statement of Assertion (A) is followed by a statement of Reason (R).
Choose the correct option.

8. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

    Assertion: 18 is a lcm of smallest prime and smallest odd composite natural number.

    Reason: The smaller prime and composite numbers is 3 & 4.

    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 but 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.

9. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

    Assertion: Irrational + irrational = irraational.

    Reason: $\frac{\text{Integer}}{\text{Integer}} = \text{integer}$.

    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 but 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.

10. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

    Assertion: $3 + 2\sqrt{5}$ is a rational number.

    Reason: Sum of rational and irrational number is always irraational.

    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 but 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.

*   State whether the following sentences are True or False. [1 Marks Each]   **[2]**

11. π is an irrational number (True/ False).

12. π is an irrational number (True/ False).

*   Answer the following questions in one sentence. [1 Marks Each]   **[2]**

13. If a and b are relatively prime numbers, then what is their LCM?

14. State whether the given statement is true of false:
    The product of two rationals is always rational.

> Section B

*   Given section consists of questions of 2 marks each.   [10]

1. Find the LCM and HCF of 17, 23 and 29 integers by applying the prime factorisation method.

2. Express 7429 as a product of its prime factors.

3. Define HCF of two positive integers and find the HCF of the following pairs of numbers: 32 and 54

4. Has the rational number $\frac{441}{2^2 \times 5^7 \times 7^2}$ terminating or a non terminating decimal representation?

5. Check whether 6^n can end with the digit 0 for any natural number n.

Section C

*   Given section consists of questions of 3 marks each.   [12]

1. Explain why $3 \times 5 \times 7 + 7$ is a composite number.

2. Prove that $\sqrt{2} + \sqrt{3}$ is an irrational number.

3. Can two numbers have 16 as their H.C.F. and 380 as their L.C.M? Give reason.

4. Using prime factorization, find the HCF and LCM of:
    144, 198

Section D

*   Given section consists of questions of 5 marks each.   [10]

1. There is a circular path around a sports field. Sonia takes 18 minutes to drive one round of the field, while Ravi takes 12 minutes for the same. Suppose they both start at the same point and at the same time and go in the same direction. After how many minutes will they meet again at the starting point?

2. Prove that $\left(5 - 2\sqrt{3}\right)$ is an irrational number.

Section E

*   Case study based questions   [4]

1. Real numbers are extremely useful in everyday life. That is probably one of the main reasons we all learn how to count and add and subtract from a very young age. Real numbers help us to count and to measure out quantities of different items in various fields like retail, buying, catering, publishing etc. Every normal person uses real numbers in his daily life. After knowing the importance of real numbers, try and improve your knowledge about them by answering the following questions on real life based situations.

    1. Two tankers contain 768 litres and 420 litres of fuel respectively. Find the maximum capacity of the container which can measure the fuel of either tanker exactly.

    2. Pens are sold in pack of 8 and notepads are sold in pack of 12. Find the least number of pack of each type that one should buy so that there are equal number

of pens and notepads.

3. Three people go for a morning walk together from the same place. Their steps measure 80cm, 85cm and 90cm respectively. What is the minimum distance travelled when they meet at first time after starting the walk assuming that their walking speed is same?

Or

In a school Independence Day parade, a group of 594 students need to march behind a band of 189 members. The two groups have to march in the same number of columns. What is the maximum number of columns in which they can march?

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