YEAR-2026	**JINDAL SCHOOL, BARBIL**	**PERIODS: 06**
	WORKSHEET-1	
CLASS-X	**REAL ANALYSIS (01)**	**SUB: MATHEMATICS**
	(Prepared by B. MOHANTY)	**CODE: 041 / 241**

SECTION-A **[15 × 1**

This section has 15 Multiple Selective Questions (MSQs) carrying 1 mark each.

1. A rational of the form $\frac{p}{q}$, where p, q are integer and q≠ 0, is terminate if and only if

   (a) $q = 2^m \times 5^n$, where m and n are natural numbers.

   (b) $q = 2^m \times 5^n$, where m and n are whole numbers.

   (c) $q = 2^m \times 3^n$, where m and n are integers.

   (d) $q = \lambda \times 2^m \times 5^n$, where λ, m and n are natural numbers.

2. $\frac{Rational\ Number}{Irrational\ Number}$ is

   (a) a rational

   (b) an irrational

   (c) may be a rational or an irrational

   (d) may not be a real number

3. Number of real numbers lies in between 1.9999… and 2 are

   (a) Infinite (b) finite (c) 0 (d) 1

4. If p, q, r, s and t are prime number then H.C.F. (p, q, r, s, t) is

   (a) $p \times q \times r \times s \times t$

   (b) 0

   (c) 1

   (d) not defined

5. If p and q are prime number then H.C.F. (p^2, q^1, $p^2 \times q^1$, p^1, q^2) is

   (a) $p^2 \times q^1$ (b) 1 (c) p^2 (d) q^2

6. H.C.F. ($n^2 - 1, n^2 + 1$) is

   (a) 0 (b) 1 (c) 2 (d) n

7. If H.C.F. (p, p + 2) = 1, where p and p+2 are prime then p and p+2 are called

   (a) co-prime (b) twin-prime (c) kaprekar number (d) NOT

8. If H.C.F. $(a, b) = 4$ and $a \times b = 3952$ then L.C.M. (a, b) is

(a) 247 (b) 104 (c) 76 (d) 988

9. The prime factorisation of 13915 is

(a) $5 \times 11^3 \times 13^2$

(b) $5 \times 11^3 \times 23^2$

(c) $5 \times 11^2 \times 23$

(d) $5 \times 11^2 \times 13^2$

10. The smallest number which divided by 21, 19 and 23 leaves remainder 11 in each case is

(a) 9177 (b) 18354 (c) 9717 (d) 3381

11. For any natural numbers, $7^{2n} - 4^{2n}$ is always divisible by

(a) 3 (b) 11 (c) both 3 and 11 (d) NOT

12. For any integer n an odd number is of the form

(a) 4m (b) 4m+1 (c) 4m+3 (d) Either 4m+1 or 4m+3

13. Three bells ring at intervals of 3, 5 and 7 minutes. If they start rang at 1 AM., when they will ring again?

(a) 2:45 PM (b) 2: 45 AM (c) 4:30 AM (d) 4:30 PM

14. If 5 is the least prime factor of "a" and 11 is the least prime factor of "b" then least prime factor of "$a + b$" is

(a) 2 (b) 5 (c) 11 (d) both 5 and 11

15. If p and q are co-prime then p^2 and q^4 are

(a) twin-prime (b) co-prime (c) not co-prime (d) odd numbers

SECTION-B

[5 × 2

This section has 3 Very Short Answer (VSA) type questions carrying 2 marks each.

16. Find two numbers such that their H.C.F. is 12 and their L.C.M. is 82?

17. Find the greatest number which divides 82 and 70 leaving remainder 2 and 5 respectively.

18. What is the smallest number that, when divided by 25, 46 and 61 leaves remainders of 5, 6 and 1.

19. Find the LCM of 1625 and 1225 and their HCF also.

20. Show that $\sqrt{5} + \sqrt{3}$ is irrational if $\sqrt{3}$ is irrational.

SECTION-C

[4 × 5

This section has 4 Long Answer (LA) type questions carrying 5 marks each.

21. Show that $\sqrt{5}$ is an irrational number.

22. Prove that there is no positive integer n for which $\sqrt{n-1}+\sqrt{n+1}$ is rational.

23. A rectangular courtyard is 100 m long and 441 m broad. It is paved with square tiles of same size. Find the least possible number of such tiles.

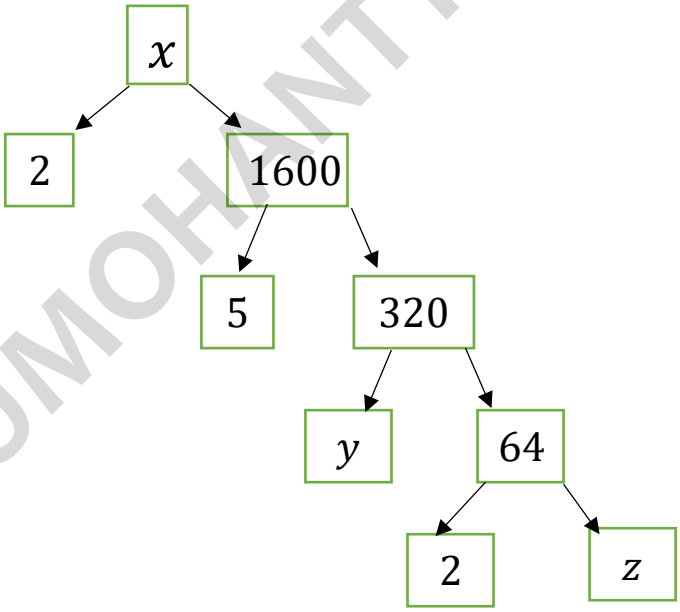
24. If a prime factorization of a natural number n is $3^3 \times 5^3 \times 7^2 \times 2^2$, write the consecutive zeroes in n.

SECTION-D

[1 × 4

This section has 1 case study-based questions carrying 4 marks each.

25. Observe the factor tree below and answer the questions:



(i) The value of x is

(a) 3200 (b) 1600 (c) 4800 (d) 2400

(ii) The value of y is

(a) 2 (b) 3 (c) 5 (d) 7

(iii) The value of z is

(a) 1 (b) 2 (c) 5 (d) NOT