

# Mathematics

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(Chapter - 1) (Real Numbers) (Practice Test 2)

(Class X)

Time: 1 hour 15 minutes

M. M: 25

## General Instructions:

- This question paper contains four sections: A, B, C and D. Each part is compulsory.
- Section A has 5 MCQ of one mark each.
- Section B has 3 questions of two marks each.
- Section C has 3 questions of three marks each.
- Section D has 2 questions of five marks each, attempt any 1 out of 2.
- There is no negative marking.

### [Section - A]

- The HCF of 95 & 152 is  
(A) 57 (B) 1 (C) 19 (D) 38
- If  $\text{HCF}(26, 169) = 13$ , then the  $\text{LCM}(26, 169) =$   
(A) 26 (B) 52 (C) 338 (D) 13
- If  $a = 2^3 \times 3$ ,  $b = 2 \times 3 \times 5$ ,  $c = 3^n \times 5$  and  $\text{LCM}(a, b, c) = 2^3 \times 3^2 \times 5$ , then  $n =$   
(A) 1 (B) 2 (C) 3 (D) 4
- The decimal expansion of the rational number  $\frac{14587}{1250}$   
(A) one decimal place (B) two decimal place  
(C) three decimal place (D) four decimal place
- if  $p$  and  $q$  are co-prime numbers, then  $p^2$  and  $q^2$  are  
(A) coprime (B) not coprime (C) even (D) odd

### [Section - B]

- What is a composite number?
- Write the exponent of 2 in the prime factorization of 144.
- Write the condition to be satisfied by  $q$  so that a rational number  $p/q$  has a non-terminating decimal expansion.

### [Section - C]

- What can you say about the prime factorization of the denominator of  $\overline{43.123456789}$ .
- Show that  $\frac{1}{\sqrt{2}}$  is irrational.
- In a morning walk three persons step off together, their steps measure 80 cm, 85 cm, 90 cm respectively. What is the minimum distance each should walk so that he can cover the distance in complete steps?

### [Section - D]

- Let  $a, b, c, d$  be positive rational such that  $a + \sqrt{b} = c + \sqrt{d}$ , then prove that either  $a = c$  and  $b = d$  or  $b$  and  $d$  are squares of rationals.
- Let  $a$  and  $b$  be positive integers. Show that  $\sqrt{2}$  always lies between  $\frac{a}{b}$  and  $\frac{a+2b}{a+b}$

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## Hints and Answers

### Section - A

1. 19
2. 338
3. 2
4. Four decimal place
5. coprime

### Section - B

6. A composite number is a positive integer which is not prime (i.e., which has factors other than 1 and itself)
7. 4
8. The prime factorization of  $q$  is not of the form  $2^m \times 5^n$ , where  $m, n$  are non-negative integers.

### Section - C

9. Prime factorization of the denominator contains factor other than 2 or 5
11. 122m 40cm



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