Maxprap. Chapter wise Series Class 10th – Real Numbers

Class : 10th **Subject: Mathematics**

Max. Marks : 50 **Duration : 2 Hrs**

Sections: A (MCQs), B (Short Answer-I), C (Short Answer-II), D (Long Answer), E (Case-Based).

General Instructions:

(i). All questions are compulsory.

(ii). This question paper contains 23 questions divided into five Sections A, B, C, D and E. (iii). Section A comprises of 10 MCQs of 1 mark each. Section B comprises of 5 questions of 2 marks each. Section C comprises of 4 questions of 3 marks each. Section D comprises of 2 question of 5 marks each and Section E comprises of 2 Case Study Based Questions of 4 marks each.

(iv). There is no overall choice.

(v). Use of Calculators is not permitted.

(vi). Draw neat figures wherever required. Take π = 22/7, wherever required if not stated.

Section A

Questions 1 to 10 carry 1 mark each

1. The ratio of HCF to LCM of the least composite number and the least prime number is:

a) 2 : 1 b) 1 : 1 c) 1 : 2 d) 1 : 3

2. The prime factorisation of the number 5488 is

a) $2^4 \times 7^4$ b) $2^4 \times 7^3$ c) $2^3 \times 7^4$ d) $2^3 \times 7^3$

3. The HCF of two numbers is 27 and their LCM is 162. If one of the numbers is 54, what is the other number is:

a) 36 b) 45 c) 81 d) 9

4. 180 can be expressed as a product of its prime factors as

a) 25× 4 × 3 b) 10× 2×3^2 c) $2^2 \times 3^2 \times 5$ d) 4× 9 × 5

5. If the HCF of 72 and 234 is 18, then the LCM (72, 234) is:

a) 936 b) 836 c) 324 d) 234

6. HCF× LCM for the numbers 40 and 30 is:

a) 120 b) 12 c) 40 d) 1200

7. $2 - \sqrt{3}$ is

a) an integer b) a whole number c) an irrational number d) a rational number

8. If the prime factorisation of 2520 is $2^3 \times 3^a \times b \times 7$, then the value of a + 2b is:

a) 9 b) 10 c) 7 d) 12

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Assertion(A)/Reason(R) Based (9-10): In the following questions, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

a) Both A and R are true and R is the correct explanation of A.
b) Both A and R are true but R is not the correct explanation of A.
c) A is true but R is false.
d) A is false but R is true.

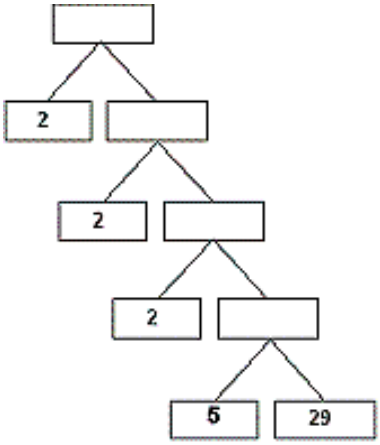
9. Assertion (A): If L.C.M. {p, q} = 30and H.C.F. {p, q} = 5, then $p \cdot q = 150$
Reason (R): L.C.M. of (a, b) × H.C.F. of (a, b) = $a \cdot b$

10. Assertion (A): L.C.M. and H.C.F. of a and 20 are 100 and 10 respectively, then a = 50.
Reason (R): L.C.M × H.C.F. = First number × Second number

SECTION – B

Questions 11 to 15 carry 2 marks each

11. Find the missing numbers in the following factorization:



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

13. The LCM of two numbers is 14 times their HCF. The sum of LCM and HCF is 600. If one number is 280, then find the other number.

14. Find the LCM and HCF of the pairs of integers 510 and 92 and verify that LCM× HCF = product of the two numbers.

15. If $\sqrt{2}$ is given as an irrational number, then prove that $(7 - 2\sqrt{2})$ is an irrational number.

SECTION – C

Questions 16 to 19 carry 3 marks each

16. Prove $\frac{1}{2+\sqrt{3}}$ is an irrational number.

17. Find the largest possible positive integer that divides 125, 162 and 259 leaving remainder 5, 6 and 7 respectively.

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

19. 144 cartons of Coke cans and 90 cartons of Pepsi cans are to be stacked in a canteen. If each stack is of the same height and if it equal contain cartons of the same drink, what would be the greatest number of cartons each stack would have?

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SECTION – D

Questions 20 to 21 carry 5 marks each

20. Show that $(4 + 3\sqrt{2})$ is irrational number.

21. (a) Explain why the numbers $8 \times 7 \times 6 \times 5 \times 4 + 5 \times 4$ and $11 \times 13 \times 15 + 11$ are composite numbers?
(b) Show that any number of the form 6^n ends with the digit zero, where n is natural number.

SECTION – E (Case Study Based Questions)

Questions 22 & 23 carry 4 marks each

22. Read the following text carefully and answer the questions that follow:

To enhance the reading skills of grade X students, the school nominates you and two of your friends to set up a class library. There are two sections - section A and section B of grade X. There are 32 students in section A and 36 students in section B.

a) What is the minimum number of books you will acquire for the class library, so that they can be distributed equally among students of Section A or Section B? (1)

b) If the product of two positive integers is equal to the product of their HCF and LCM is true then, the HCF (32, 36) is (1)

c) $7 \times 11 \times 13 \times 15 + 15$ is a (2)

OR

If p and q are positive integers such that $p = ab^2$ and $q = a^2 b$, where a, b are prime numbers, then the LCM (p, q) is (2)

23. Read the following text carefully and answer the questions that follow:

A seminar is being conducted by an Educational Organisation, where the participants will be educators of different subjects. The number of participants in Hindi, English and Mathematics are 60, 84 and 108 respectively.

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a) What is the maximum number of participants that can be accommodated in each room if there are multiple rooms, and in each room, the same number of participants are to be seated, and all of them are in the same subject? (1)

b) What is the minimum number of rooms required during the event? (1)

c) Show that the product of two numbers 60 and 84 is equal to the product of their HCF and LCM. (2)

OR

What is the LCM of two numbers if their product is 1080 and their HCF is 30? (2)

Real Number Paper Details – Analysis		
Objective Questions		
MCQ	1 marks x 8 question = 8	
Assertion Reason	1 marks x 2 question = 2	
Subjective		
Short type I	2 marks x 5 question = 10	
Short type II	3 marks x 4 question = 12	
Long Type	5 marks x 2 question = 10	
Case Studies Based		
Case 1	4 marks	
Case 2	4 marks	

Total = 50 marks Your Score =

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