

Mathematics

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(Chapter – 1) (Real Numbers) (Practice Test 5)

(Class X)

Time: 1 hour 15 minutes

M. M: 50

General Instructions:

- This question paper contains four sections: A, B, C and D. Each part is compulsory.
- Section A has 10 MCQ of one mark each.
- Section B has 5 questions of two marks each.
- Section C has 6 questions of three marks each. Attempt any 5 out of 6.
- Section D has 5 questions of five marks each, attempt any 3 out of 5.
- There is no negative marking.

[Section – A]

1. The largest number that will divide 398, 436 and 542 leaving remainders 7, 11 and 15 respectively is
(A) 17 (B) 11 (C) 34 (D) 45
2. For some integer p , every odd integer is of the form
(A) $2p + 1$ (B) $2p$ (C) $p + 1$ (D) p
3. π is
(A) A rational number (B) an irrational number
(C) both (D) neither rational nor irrational
4. The smallest composite number
(A) 1 (B) 2 (C) 3 (D) 4
5. The least number that is divisible by all the numbers from 1 to 8 (both inclusive) is
(A) 840 (B) 2520 (C) 8 (D) 420
6. The product of three consecutive integers is divisible by
(A) 5 (B) 6 (C) 7 (D) none of these
7. Every positive even integer is of the form _____ for some integer ' q '
(A) $2q$ (B) $2q - 1$ (C) $2q + 1$ (D) none of these
8. Express 98 as a product of its primes
(A) $2^2 \times 7$ (B) $2^2 \times 7^2$ (C) 2×7^2 (D) $2^3 \times 7$
9. Three farmers have 490 kg, 588 kg, 882 kg, of wheat respectively. Find the maximum capacity of a bag so that wheat can be packed in exact number of bags.
(A) 98 kg (B) 290 kg (C) 200 kg (D) 350 kg
10. $m^2 - 1$ is divisible by 8, if m is
(A) an even integer (B) an odd integer
(C) a natural number (D) a whole number

[Section – B]

11. If P is prime number then, what is the LCM of P, P^2, P^3 ?
12. A number N when divided by 14 gives the remainder 5. What is the remainder when the same number is divided by 7?
13. Examine whether $\frac{17}{30}$ is a terminating decimal or not.
14. Can the number 4^n , n be a natural number, end with the digit 0? Give reason.
15. Write a rational number between $\sqrt{3}$ and $\sqrt{5}$.

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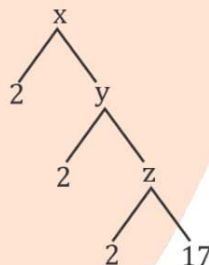
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[Section – C]

16. Find the LCM and HCF of 12, 15 and 21 by applying the prime factorization method.
17. 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 from 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?
18. Write down the decimal expansions of the following numbers:
- (i) $\frac{35}{50}$ (ii) $\frac{15}{1600}$
19. Find the value of x, y and z in the given factor tree. Can the value of 'x' be found without finding the value of 'y' and 'z'? If yes, explain.



20. If n is an odd positive integer, show that $(n^2 - 1)$ is divisible by 8.
21. The decimal expansions of some real numbers are given below. In each case, decide whether they are rational or not. If they are rational, write it in the form $\frac{p}{q}$. What can you say about the prime factors of q?
- (i) 0.140140014000140000... (ii) $\overline{0.16}$

[Section – D]

22. Find the LCM and HCF of the following pairs of integers and verify that $\text{LCM} \times \text{HCF} = \text{product of the two numbers}$.
- (i) 26 and 91 (ii) 198 and 144
23. Show that any positive odd integer is of the form $6q + 1$ or $6q + 3$ or $6q + 5$ where q is some integer.
24. Use Euclid's division lemma to show that the square of any positive integer is either of the form $3m$ or $3m + 1$ for some integer m.
25. Use Euclid's division algorithm to find the HCF of:
- (i) 960 and 432 (ii) 4052 and 12576.
26. Prove that $\sqrt{7}$ is an irrational number.
27. Show that $5 - \sqrt{3}$ is an irrational number.

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Hints and Answers

Section – A

1. 17
2. $2p + 1$
3. An irrational number
4. 3
5. 840
6. 6
7. $2q$
8. 2×7^2
9. 98 kg
10. An odd integer

Section – B

11. p^3
12. 5
13. Non-terminating decimal
14. 4^n can never end with 0
15. $\frac{9}{5}$

Section – C

16. 420
17. 36 minutes
18. (i) 0.70 (ii) 0.009375
19. $z = 2 \times 17 = 34$; $y = 34 \times 2 = 68$ and $x = 2 \times 68 = 136$

Yes, value of x can be found without finding value of y and z as $x = 2 \times 2 \times 2 \times 17$ which are prime factors of x .

Section – D

25. (i) 48 (ii) 4

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