Edufest Junior, Bavdhan 7709585248
UNIT TEST PRIME TIME

Name :	Total Marks : 40	Time : 60 Minutes

SECTION – A Multiple Choice Questions — 10 × 1 = 10 Marks

Q1. What is the prime factorisation of 84?

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

Q2. Which of the following numbers is a multiple of both 3 and 7?

(a) 21
(b) 27
(c) 35
(d) 42

Q3. Which of the following numbers is divisible by 9?

(a) 1532
(b) 2187
(c) 3457
(d) 4238

Q4. How many prime numbers are there between 20 and 50?

(a) 6
(b) 7
(c) 8
(d) 9

Q5. What is the smallest number that must be added to 540 to make it divisible by 7?

(a) 3
(b) 4
(c) 5
(d) 6

Q6. Which of the following numbers is divisible by 6?

(a) 412
(b) 514
(c) 618
(d) 724

Q7. A number is a multiple of 7 and leaves a remainder of 3 when divided by 5. What could the number be?

(a) 22
(b) 24
(c) 28
(d) 32

Q8. Which statement is true about co-prime numbers?

(a) They must both be prime numbers.
(b) They have no common factors other than 1.
(c) Their HCF is their product.
(d) They must both be odd numbers.

Q9. Assertion-Reason: Read the following statements and choose the correct option.

Assertion (A): The number 29 is a prime number.
Reason (R): A prime number is a number that is only divisible by 1 and itself.

Choose the correct option:

(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.

Q10. Assertion-Reason:

Assertion (A): The smallest composite number that is even is 4.
Reason (R): A composite number has more than two factors. The factors of 4 are 1, 2 and 4.

Choose the correct option:

(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.

SECTION – B Short Answer Questions — 4 × 2 = 8 Marks

Q11. Find the prime factorisation of 168.

Q12. Using the divisibility test for 8, determine if 3456 is divisible by 8. Explain your answer.

Q13. Find the prime factorisation of 840 using the factor tree method.

Q14. Check if the number 840 is divisible by 8 and by 11. Explain your reasoning.

SECTION – C Answer the Following — 3 × 3 = 9 Marks

Q15. Find all the prime numbers between 80 and 110. Use the Sieve method or check divisibility by primes ≤ $\sqrt{110}$. List them clearly.

Q16. What is the smallest 4-digit number that is divisible by both 4 and 10? Explain your method step by step.

Q17. A number when divided by 4 leaves a remainder of 3. What is the largest such 3-digit number that is also a multiple of 5? Show all working.

SECTION – D Long Answer Question — 1 × 5 = 5 Marks

Q18. Find the smallest 5-digit number that is a multiple of 15, 20 and 25.

SECTION – E Case Study Based Questions — 2 × 4 = 8 Marks

Case Study 1 : The School Library

A librarian, Mrs. Sharma, is organising a new collection of books. She has 210 adventure books and 350 mystery books. She wants to arrange the books on shelves so that each shelf has the same number of books, each shelf contains only one type of book, and the number of books per shelf is as large as possible.
She also notices that the total number of books (210 + 350 = 560) ends in a zero.

Answer the following:

(a) Find the prime factorisation of 210. [1 mark]
(b) Find the prime factorisation of 350. [1 mark]
(c) Determine the largest number that is a factor of both 210 and 350 (i.e. HCF). [1 mark]
(d) Use the divisibility rule for 10 to show that the HCF you found in (c) is divisible by 10.

Case Study 2 : The Traffic Lights

Three traffic lights at different intersections turn green at different intervals. The first light turns green every 40 seconds, the second every 60 seconds, and the third every 75 seconds. All three lights turn green together at 8:00 AM when traffic opens.
A traffic engineer wants to know after how long all three lights will turn green together again, and wants to express the answer in minutes.

Answer the following:

(a) Find the prime factorisation of 40. [1 mark]
(b) Find the prime factorisation of 60. [1 mark]
(c) Find the LCM of 40, 60 and 75 using prime factorisation. [1 mark]
(d) Based on your answer from (c), after how many minutes will all three lights turn green at the same time? [1 mark]