SmartSteps Academy

College Masjid Road, Near College Masjid, Hailakandi Town W/N-3, Hailakandi
For Enquiries: 9101110392, 7002239812, 6003454430,7002331585

Real Number

DPP 1

1. The HCF and the LCM of 12 and 21, respectively, are:
   A. 3, 84
   B. 12, 420
   C. 3, 420
   D. 420, 3

2. The LCM of the smallest two-digit composite number and the smallest composite number is:
   A. 12
   B. 4
   C. 20
   D. 44

3. The total number of factors of a prime number is:
   A. 1
   B. 0
   C. 2
   D. 3

4. HCF of two numbers is 27 and their LCM is 162. If one of the numbers is 36, then the other number is:
   A. 36
   B. 35
   C. 9
   D. 81

5. HCF of 144 and 198 is:
   A. 9
   B. 18
   C. 6
   D. 12

6. The sum of exponents of prime factors in the prime-factorisation of 196 is:
   A. 3
   B. 4
   C. 5
   D. 2

7. If two positive integers a and b are written as $a = x^3y^2$ and $b = xy^3$, where x, y are prime numbers, then HCF (a, b) is:
   A. xy
   B. x^2y^2
   C. x^3y^3
   D. x^2y^2

8. If two positive integers p and q can be expressed as $p = ab^2$ and $q = ab^3$, a, b being prime numbers, then LCM (p, q) is equal to:
   A. ab
   B. a^2b^2
   C. a^3b^2
   D. a^3b^3

9. 225 can be expressed as:
   A. 5×3^2
   B. $5^2 \times 3$
   C. $5^2 \times 3^2$
   D. $5^3 \times 3$

10. The ratio of HCF and LCM of the least composite number and the least prime number is:
    A. 1 : 2
    B. 2 : 1
    C. 1 : 1
    D. 1 : 3

11. The least number which is a perfect square and is divisible by each of 16, 20 and 24 is:
    A. 240
    B. 1600
    C. 2400
    D. 3600

12. 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 is:
    A. 1
    B. 2
    C. 3
    D. 4

13. The L.C.M. of x and 18 is 36. The H.C.F. of x and 18 is 2. What is the number x?
    A. 1
    B. 2
    C. 3
    D. 4

14. If 3 is the least prime factor of p and 5 is the least prime factor of q, then the least prime factor of $(p + q)$ is:
    A. 1
    B. 2
    C. 5
    D. 3

15. Given $\text{HCF}(2520, 6600) = 40$, $\text{LCM}(2520, 6600) = 252 \times k$, then the value of k is:
    A. 1650
    B. 1600
    C. 165
    D. 1625

16. If $a = 3 \times 5$, $b = 3 \times 5^2$ and $c = 2^5 \times 5$, then LCM (a, b, c) and HCF (a, b, c) are:
    A. 1200, 5
    B. 2400, 5
    C. 2400, 15
    D. 1200, 15

17. If $a = 2^2 \times 3^x$, $b = 2^2 \times 3 \times 5$, $c = 2^2 \times 3 \times 7$ and LCM $(a, b, c) = 3780$, then x is:
    A. 1
    B. 3
    C. 2
    D. 0

18. If the HCF of 85 and 153 is expressible in the form $85n - 153$, then the value of n is:
    A. 3
    B. 2
    C. 4
    D. 1

19. If the HCF of 408 and 1032 is expressible in the form $1032m - 408 \times 5$, then the value of m is:
    A. 4
    B. 3
    C. 1
    D. 2

20. The exponent of 5 in the prime factorisation of 3750 is:
    A. 3
    B. 4
    C. 5
    D. 6

21. The LCM of two numbers is 1200. Which of the following cannot be their HCF?
    A. 600
    B. 500
    C. 400
    D. 200

22. If $n = 2^3 \times 3^4 \times 5^2 \times 7$, then the number of consecutive zeros in n is:
    A. 2
    B. 3

C. 4

D. 7

23. The sum of the exponents of the prime factors in the prime factorisation of 196 is:

A. 1

B. 2

C. 4

D. 6

24. The HCF of 95 and 152 is:

A. 57

B. 1

C. 19

D. 38

25. If HCF $(26, 169) = 13$, then LCM $(26, 169)$ is:

A. 26

B. 52

C. 338

D. 13

Directions: For the following questions, 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.

26. Assertion (A): The HCF of two numbers is 16 and their product is 3072. Then their LCM = 162.
Reason (R): If a and b are two positive integers, then HCF $\times$ LCM $= ab$.

A. (a)

B. (b)

C. (c)

D. (d)

27. Assertion (A): If LCM $(p, q) = 30$ and HCF $(p, q) = 5$, then $p \times q = 150$.
Reason (R): LCM $(a, b)\times$ HCF $(a, b) = ab$.

A. (a)

B. (b)

C. (c)

D. (d)

28. Assertion (A): Given that HCF $(306, 657) = 9$ and LCM $(306, 657) = 2238$.
Reason (R): If a and b are two positive integers and HCF $(a, b) = 9$, then LCM $(a, b) = \frac{a+b}{2}$.

A. (a)

B. (b)

C. (c)

D. (d)

29. Assertion (A): 6^n can end with the digit 0 for any natural number n.
Reason (R): Any positive integer ending with 0 or 5 is divisible by 5 and so its prime factorisation must contain 5.

A. (a)

B. (b)

C. (c)

D. (d)

30. Assertion (A): The HCF of two numbers is 5 and their LCM is 150. If one of the numbers is 15, then the other is 50.
Reason (R): For any two positive integers a and b, HCF$(a, b)\times$LCM$(a, b) = ab$.

A. (a)

B. (b)

C. (c)

D. (d)

31. Assertion (A): 100 can be expressed as a product of primes.
Reason (R): 100 is a composite number.

A. (a)

B. (b)

C. (c)

D. (d)

Case Study Based MCQs

32. Mira is very health conscious and avoids fast food, cakes, ice-creams etc. On her birthday she decided to serve fruits to her friend guests. She had 60 bananas and 36 apples which are to be distributed equally among all.

(a) How many maximum guests Mira can invite?

A. 6
B. 96
C. 12
D. 180

(b) How many apples will each guest get?

A. 3
B. 6
C. 4
D. 5

(c) How many bananas will each guest get?

A. 3
B. 6
C. 4
D. 5

(d) If Mira also decides to distribute 42 mangoes, how many maximum guests she can invite?

A. 12
B. 6
C. 8
D. 180

(e) How many total fruits will each guest get?

A. 23
B. 25
C. 17
D. 18

33. Ruchi wants to organize her birthday party. She is very health conscious, thus she decided to serve fruits only in her birthday party.

Ruchi has 36 apples and 60 bananas at home and decided to serve them. She wants to distribute fruits among guests. She does not want to discriminate among guests, so she decided to distribute fruits equally among all.

(a) How many maximum guests Ruchi can invite?

(b) How many apples and bananas will each guest get?

(c) Ruchi decides to add 42 mangoes also. In this case how many maximum guests Ruchi can invite?

(d) How many total fruits will each guest get?

(e) If Ruchi decides to add 3 more mangoes and removes 6 apples in total fruits, in this case how many maximum guests Ruchi can invite?

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