

Question 1.

For any positive integer  $a$  and  $b$ , there exist unique integers  $q$  and  $r$  such that  $a = 3q + r$ , where  $r$  must satisfy.

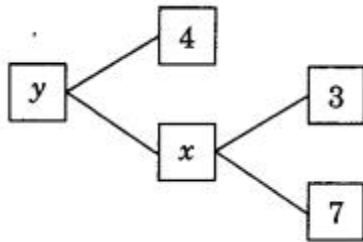
- (a)  $0 \leq r < 3$
- (b)  $1 < r < 3$
- (c)  $0 < r < 3$
- (d)  $0 < r \leq 3$

Answer: (a)  $0 \leq r < 3$

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Question 2.

The values of  $x$  and  $y$  in the given figure are



- (a)  $x + 10, y = 14$
- (b)  $x = 21, y = 84$
- (c)  $x = 21, y = 25$
- (d)  $x = 10, y = 40$

Answer: (b)  $x = 21, y = 84$

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Question 3.

If  $\text{HCF}(a, b) = 12$  and  $a \times b = 1800$  then  $\text{LCM}(a, b)$  is

- (a) 3600
- (b) 900
- (c) 150
- (d) 90

Answer: (c) 150

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Question 4.

If  $m^n = 32$ , where  $m$  and  $n$  are positive integers, then the value of  $(n)^{mn}$  is

- (a) 9765625
- (b) 9775625
- (c) 9785625
- (d) 9865625

Answer: (a) 9765625

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Question 5.

If  $(97)^3 \times (4981)^{2x-6} = (79)^9$  then value of  $x$  is

- (a) 12
- (b) 9
- (c) 8
- (d) 6

Answer: (d) 6

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Question 6.

The decimal expansion of  $\frac{1}{178}$  will terminate after how many places of decimals?

- (a) 1
- (b) 2
- (c) 3
- (d) will not terminate

Answer: (c) 3

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Question 7.

The decimal expansion of  $\frac{1}{n}$  is

- (a) terminating
- (b) non-terminating and non-recurring
- (c) non-terminating and recurring
- (d) does not exist.

Answer: (b) non-terminating and non-recurring

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Question 8.

If HCF of 55 and 99 is expressible in the form  $55m - 99$ , then the value of  $m$ :

- (a) 4
- (b) 2
- (c) 1
- (d) 3

Answer: (b) 2

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Question 9.

Given that LCM of  $(91, 26) = 182$  then HCF  $(91, 26)$  is

- (a) 13
- (b) 26
- (c) 7
- (d) 9

Answer: (a) 13

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Question 10.

The decimal expansion of number  $44122 \times 53 \times 7$  is

- (a) A terminating decimal
- (b) Non-terminating but repeating
- (c) Non-terminate non repeating
- (d) terminating after two places of decimal

Answer: (a) A terminating decimal

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Question 11.

If  $A = 2n + 13$ ,  $B = n + 7$  where  $n$  is a natural number then HCF of  $A$  and  $B$

- (a) 2
- (b) 1
- (c) 3
- (d) 4

Answer: (b) 1

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Question 12.

$(-1)^n + (-1)^{8n} = 0$  when  $n$  is

- (a) any positive integer
- (b) any odd natural number
- (c) any even numeral number
- (d) any negative integer

Answer: (b) any odd natural number

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Question 13.

If the LCM of 12 and 42 is  $10m + 4$  then the value of  $m$  is

- (a) 50
- (b) 8
- (c) 15
- (d) 1

Answer: (b) 8

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Question 14.

The decimal expansion of the rational number  $\frac{624322}{54}$  will terminate after

- (a) 4 places of decimal
- (b) 3 places of decimal
- (c) 2 places of decimal
- (d) 1 place of decimal

Answer: (a) 4 places of decimal

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Question 15.

$n^2 - 1$  is divisible by 8, if  $n$  is

- (a) an integer
- (b) a natural number
- (c) an odd natural number
- (d) an even natural number

Answer: (c) an odd natural number

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Question 16.

If  $n$  is a natural number, then exactly one of numbers  $n$ ,  $n + 2$  and  $n + 1$  must be a multiple of

- (a) 2
- (b) 3
- (c) 5
- (d) 7

Answer: (b) 3

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Question 17.

The rational number between  $\frac{7}{2}$  and  $\frac{7}{3}$  is

- (a)  $\frac{6}{5}$
- (b)  $\frac{3}{4}$
- (c)  $\frac{3}{2}$
- (d)  $\frac{4}{5}$

Answer: (c)  $\frac{3}{2}$

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Question 18.

If  $a$  and  $b$  are two positive numbers and  $H$  and  $L$  are their HCF and LCM respectively. Then

- (a)  $a \times b = H \times L$
  - (b)  $a = b \times H$
  - (c)  $a = b \times LH$
  - (d)  $H = L \times b$
- 

Question 19.

LCM of  $2^3 \times 3^2$  and  $2^2 \times 3^3$  is

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

Answer: (c)  $2^3 \times 3^3$

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Question 20.

The LCM of 2.5, 0.5 and 0.175 is

- (a) 2.5
- (b) 5
- (c) 7.5
- (d) 0.875

Answer: (d) 0.875

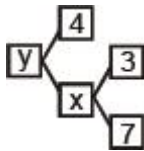
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1. The decimal expansion of number  $2^2 \times 5^3 \times 7$  has:

- (a) a terminating decimal
- (b) non-terminating but repeating
- (c) non-terminating non repeating
- (d) terminating after two places of decimal

2. The values of x and y in the given figure are:



- (a)  $x = 10; y = 14$
- (b)  $x = 21; y = 84$
- (c)  $x = 21; y = 25$
- (d)  $x = 10; y = 40$

3. For any positive integer a and 3, there exist unique integers q and r such that  $a = 3q + r$ , where r must satisfy :

- (a)  $0 \leq r < 3$
- (b)  $1 < r < 3$
- (c)  $0 < r < 3$
- (d)  $0 < r \leq 3$

4.  $\pi - \frac{22}{7}$  is:

- (a) a rational number
- (b) an irrational number
- (c) a prime number
- (d) an even number

5. L.C.M. of  $23 \times 32$  and  $22 \times 33$  is :

- (a) 23
- (b) 33
- (c)  $23 \times 33$

(d)  $22 \times 32$

6. The HCF and LCM of two numbers are 33 and 264 respectively. When the first number is completely divided by 2 the quotient is 33. The other number is:

(a) 66

(b) 130

(c) 132

(d) 196

7. What will be the least possible number of the planks, if three pieces of timber 42 m, 49 m and 63 m long have to be divided into planks of the same length?

(a) 5

(b) 6

(c) 7

(d) none of these

8. What is the greatest possible speed at which a man can walk 52 km and 91 km in an exact number of minutes?

(a) 17 m/min

(b) 7 m/min

(c) 13 m/min

(d) 26 m/min

9. If  $A = 2n + 13$ ,  $B = n + 7$ , where  $n$  is a natural number then HCF of  $A$  and  $B$  is:

(a) 2

(b) 1

(c) 3

(d) 4

10. Pairs of natural numbers whose least common multiple is 78 and the greatest common divisor is 13 are:

(a) 58 and 13 or 16 and 29

(b) 68 and 23 or 36 and 49

(c) 18 and 73 or 56 and 93

(d) 78 and 13 or 26 and 39

11. Two natural numbers whose sum is 85 and the least common multiple is 102 are:

(a) 30 and 55

(b) 17 and 68

(c) 35 and 55

(d) 51 and 34

12. 4 Bells toll together at 9.00 am. They toll after 7, 8, 11 and 12 seconds respectively. How many times will they toll together again in the next 3 hours?

(a) 3

(b) 4

(c) 5

(d) 6

13. A forester wants to plant 66 apple trees, 88 banana trees and 110 mango trees in equal rows (in terms of number of trees). Also he wants to make distinct rows of trees (i.e., only one type of trees in one row). The number of minimum rows required are

(a) 2

(b) 3

(c) 10

(d) 12

14. A number  $10x + y$  is multiplied by another number  $10a + b$  and the result comes as  $100p + 10q + r$ , where  $r = 2y$ ,  $q = 2(x + y)$  and  $p = 2x$ ;  $x, y < 5$ ,  $q \neq 0$ . The value of  $10a + b$  may be:

- (a) 11
- (b) 13
- (c) 31
- (d) 22

15. If the HCF of 65 and 117 is expressible in the form  $65m - 117$ , then the value of  $m$  is

- (a) 4
- (b) 2
- (c) 1
- (d) 3

16. The largest number which divides 70 and 125, leaving remainders 5 and 8 respectively, is

- (a) 13
- (b) 65
- (c) 875
- (d) 1750

17. If two positive integers  $a$  and  $b$  are written as  $a = x^3y^2$  and  $b = xy^3$ ;  $x, y$  are prime numbers, then HCF ( $a, b$ ) is

- (a)  $xy$
- (b)  $xy^2$
- (c)  $x^3y^3$
- (d)  $x^2y^2$

18. If two positive integers  $p$  and  $q$  can be expressed as  $p = ab^2$  and  $q = a^3b$ ;  $a, b$  being prime numbers, then LCM ( $p, q$ ) is

- (a)  $ab$
- (b)  $a^2b^2$
- (c)  $a^3b^2$
- (d)  $a^3b^3$

19. The least number that is divisible by all the numbers from 1 to 10 (both inclusive) is

- (a) 10
- (b) 100
- (c) 504
- (d) 2520

20. The decimal expansion of the rational number  $\frac{14587}{1250}$  will terminate after

- (a) one decimal place
- (b) two decimal places
- (c) three decimal places
- (d) four decimal places

- |     |     |     |     |     |
|-----|-----|-----|-----|-----|
| 1.  | 2.  | 3.  | 4.  | 5.  |
| (a) | (b) | (a) | (b) | (c) |
| 6.  | 7.  | 8.  | 9.  | 10. |
| (c) | (d) | (c) | (b) | (d) |
| 11. | 12. | 13. | 14. | 15. |
| (d) | (c) | (d) | (d) | (b) |



16. (a)      17. (b)      18. (c)      19. (d)      20. (d)
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1. The decimal form of  $\frac{129}{2^{25}7^5}$  is

- (a) terminating
- (b) non-terminating
- (c) non-terminating non-repeating
- (d) none of the above

2. HCF of 8, 9, 25 is

- (a) 8
- (b) 9
- (c) 25
- (d) 1

3. Which of the following is not irrational?

- (a)  $(2 - \sqrt{3})^2$
- (b)  $(\sqrt{2} + \sqrt{3})^2$
- (c)  $(\sqrt{2} - \sqrt{3})(\sqrt{2} + \sqrt{3})$
- (d)  $\frac{2\sqrt{7}}{7}$

4. The product of a rational and irrational number is

- (a) rational
- (b) irrational
- (c) both of above
- (d) none of above

5. The sum of a rational and irrational number is

- (a) rational
- (b) irrational
- (c) both of above
- (d) none of above

6. The product of two different irrational numbers is always

- (a) rational
- (b) irrational
- (c) both of above
- (d) none of above

7. The sum of two irrational numbers is always

- (a) irrational
- (b) rational
- (c) rational or irrational
- (d) one

8. If  $b = 3$ , then any integer can be expressed as  $a =$

- (a)  $3q, 3q + 1, 3q + 2$
- (b)  $3q$
- (c) none of the above
- (d)  $3q + 1$

9. The product of three consecutive positive integers is divisible by

- (a) 4
- (b) 6
- (c) no common factor
- (d) only 1

10. The set  $A = \{0, 1, 2, 3, 4, \dots\}$  represents the set of

- (a) whole numbers
- (b) integers
- (c) natural numbers
- (d) even numbers

11. Which number is divisible by 11?

- (a) 1516
- (b) 1452
- (c) 1011
- (d) 1121

13. 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

14. There are 312, 260 and 156 students in class X, XI and XII respectively. Buses are to be hired to take these students to a picnic. Find the maximum number of students who can sit in a bus if each bus takes equal number of students

- (a) 52
- (b) 56

- (c) 48
- (d) 63

15. There is a circular path around a sports field. Priya takes 18 minutes to drive one round of the field. Harish takes 12 minutes. Suppose they both start at the same point and at the same time and go in the same direction. After how many minutes will they meet ?

- (a) 36 minutes
- (b) 18 minutes
- (c) 6 minutes
- (d) They will not meet

16. Express 98 as a product of its primes

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

17. Three farmers have 490 kg, 588 kg and 882 kg of wheat respectively. Find the maximum capacity of a bag so that the wheat can be packed in exact number of bags.

- (a) 98 kg
- (b) 290 kg
- (c) 200 kg
- (d) 350 kg

18. For some integer  $p$ , every even integer is of the form

- (a)  $2p + 1$
- (b)  $2p$
- (c)  $p + 1$
- (d)  $p$

19. For some integer  $p$ , every odd integer is of the form

- (a)  $2p + 1$
- (b)  $2p$
- (c)  $p + 1$
- (d)  $p$

20.  $m^2 - 1$  is divisible by 8, if  $m$  is

- (a) an even integer
- (b) an odd integer
- (c) a natural number
- (d) a whole number

21. If two positive integers A and B can be expressed as  $A = xy^3$  and  $B = x^4y^2z$ ; x, y being prime numbers, the LCM (A, B) is

- (a)  $xy^2$
- (b)  $x^4y^2z$
- (c)  $x^4y^3$
- (d)  $x^4y^3z$

22. The product of a non-zero rational and an irrational number is

- (a) always rational
- (b) rational or irrational
- (c) always irrational
- (d) zero

23. If two positive integers A and B can be expressed as  $A = xy^3$  and  $B = x^4y^2z$ ; x, y being prime numbers then HCF (A, B) is

- (a)  $xy^2$
- (b)  $x^4y^2z$
- (c)  $x^4y^3$
- (d)  $x^4y^3z$

24. The largest number which divides 60 and 75, leaving remainders 8 and 10 respectively, is

- (a) 260
- (b) 75
- (c) 65
- (d) 13

25. The least number that is divisible by all the numbers from 1 to 5 (both inclusive) is

- (a) 5
- (b) 60
- (c) 20
- (d) 100

26. 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

27. The decimal expansion of the rational number  $\frac{14587}{250}$  will terminate after:

- (a) one decimal place
- (b) two decimal places
- (c) three decimal places
- (d) four decimal places

28. The decimal expansion of the rational number  $\frac{97}{2 \times 5^4}$  will terminate after:
- (a) one decimal place
  - (b) two decimal places
  - (c) three decimal places
  - (d) four decimal places
29. The product of two consecutive natural numbers is always:
- (a) prime number
  - (b) even number
  - (c) odd number
  - (d) even or odd
30. If the HCF of 408 and 1032 is expressible in the form  $1032x + 408y$ , then the value of  $x$  is
- (a) 5
  - (b) -5
  - (c) 4
  - (d) -4
31. The number in the form of  $4p + 3$ , where  $p$  is a whole number, will always be
- (a) even
  - (b) odd
  - (c) even or odd
  - (d) multiple of 3
32. When a number is divided by 7, its remainder is always:
- (a) greater than 7
  - (b) at least 7
  - (c) less than 7
  - (d) at most 7
33.  $(6 + 5\sqrt{3}) - (4 - 3\sqrt{3})$  is
- (a) a rational number
  - (b) an irrational number
  - (c) a natural number
  - (d) an integer
34. If  $\text{HCF}(16, y) = 8$  and  $\text{LCM}(16, y) = 48$ , then the value of  $y$  is
- (a) 24
  - (b) 16
  - (c) 8
  - (d) 48

35. According to the fundamental theorem of arithmetic, if  $T$  (a prime number) divides  $b^2$ ,  $b > 0$ , then

- (a)  $T$  divides  $b$
- (b)  $b$  divides  $T$
- (c)  $T^2$  divides  $b^2$
- (d)  $b^2$  divides  $T^2$

**Answer**

36. The number  $\sqrt{2}$  is

- (a) natural number
- (b) rational number
- (c) irrational number
- (d) rational or irrational

37. If  $\text{LCM}(77, 99) = 693$ , then  $\text{HCF}(77, 99)$  is

- (a) 11
- (b) 7
- (c) 9
- (d) 22

38. Euclid's division lemma states that for two positive integers  $a$  and  $b$ , there exist unique integer  $q$  and  $r$  such that  $a = bq + r$ , where  $r$  must satisfy

- (a)  $a < r < b$
- (b)  $0 < r \leq b$
- (c)  $1 < r < b$
- (d)  $0 \leq r < b$

39. For positive integers  $a$  and 3, there exist unique integers  $q$  and  $r$  such that  $a = 3q + r$ , where  $r$  must satisfy:

- (a)  $0 < r < 3$
- (b)  $1 < r < 3$
- (c)  $0 < r < 3$
- (d)  $0 < r < 3$

40. Find the greatest number of 5 digits, that will give us remainder of 5 when divided by 8 and 9 respectively.

- (a) 99921
- (b) 99931
- (c) 99941
- (d) 99951

41. For some integers  $p$  and 5, there exist unique integers  $q$  and  $r$  such that  $p = 5q + r$ . Possible values of  $r$  are

- (a) 0 or 1
- (b) 0, 1 or 2
- (c) 0, 1, 2 or 3
- (d) 0, 1, 2, 3 or 4

42. If two positive integers  $a$  and  $b$  are written as  $a = x^m y^n$  and  $b = x^p y^q$ , where  $x, y$  are prime numbers, then  $\text{HCF}(a, b)$  is

Also, find LCM of  $(a, b)$ . [NCERT Exemplar Problems; Delhi 2019]

- (a)  $xy$
- (b)  $xy^2$
- (c)  $x^3y^3$
- (d)  $x^2y^2$

43. If two positive integers  $p$  and  $q$  can be expressed as  $p = ab^2$  and  $q = c^3b$ ; where  $a, b$  being prime numbers, then LCM  $(p, q)$  is equal to [NCERT Exemplar Problems]

- (a)  $ab$
- (b)  $crb^2$
- (c)  $a^3b^2$
- (d)  $c^2b^3$

44. The ratio between the LCM and HCF of 5, 15, 20 is:

- (a) 9 : 1
- (b) 4:3
- (c) 11:1
- (d) 12:1

45. Two alarm clocks ring their alarms at regular intervals of 50 seconds and 48 seconds. If they first beep together at 12 noon, at what time will they beep again for the first time ?

- (a) 12.20 pm
- (b) 12.12 pm
- (c) 12.11pm
- (d) none of these

46. If  $A = 2n + 13$ ,  $B = n + 7$ , where  $n$  is a natural number, then HCF of  $A$  and  $B$  is:

- (a) 2
- (b) 1
- (c) 3
- (d) 4

47. There are 576 boys and 448 girls in a school that are to be divided into equal sections of either boys or girls alone. The total number of sections thus formed are:

- (a) 22
- (b) 16
- (c) 36
- (d) 21

48. The HCF of 2472, 1284 and a third number N is 12. If their LCM is  $2^3 \times 3^2 \times 5 \times 103 \times 107$ , then the number N is :

- (a)  $2^2 \times 3^2 \times 7$
- (b)  $2^2 \times 3^3 \times 103$
- (c)  $2^2 \times 3^2 \times 5$
- (d)  $2^4 \times 3^2 \times 11$

49. Two natural numbers whose difference is 66 and the least common multiple is 360, are:

- (a) 120 and 54
- (b) 90 and 24
- (c) 180 and 114
- (d) 130 and 64

50. HCF of  $52 \times 3^2$  and  $35 \times 5^3$  is:

- (a)  $5^3 \times 3^5$
- (b)  $5 \times 3^3$
- (c)  $5^3 \times 3^2$
- (d)  $5^2 \times 3^2$

51. A number  $10x + y$  is multiplied by another number  $10a + b$  and the result comes as  $100p + 10q + r$ , where  $r = 2y$ ,  $q = 2(x + y)$  and  $p = 2x$ ;  $y < 5$ ,  $q \leq 10$ . The value of  $10a + b$  may be \_\_\_\_\_.

52. If the HCF of 55 and 99 is expressible in the form  $55m - 99$ , then the value of m is \_\_\_\_\_.

53. Euclid's division lemma states for any two positive integers a and b, there exists integers q and r such that  $a = bq + r$ . If  $a = 5$ ,  $b = 8$ , then write the value of q and r.

54. If a and b are two positive integers such that  $a = 14b$ . Find the HCF of a and b.



55. Find HCF of 1001 and 385.

56. 4 Bells toll together at 9.00 am. They toll after 7, 8, 11 and 12 seconds respectively. How many times will they toll together again in the next 3 hours?

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