**CHAPTER-1 REAL NUMBERS**

**MCQ/ VSA**

1. If d = HCF (48, 72), the value of d is :
2. 24 (B) 48 (C) 12 (D) 72 [A]
3. If p, q are two consecutive natural numbers, then HCF (p, q) is :
4. q (B) p (C) 1 (D) pq [C]
5. Euclid’s division lemma states that if *a and b* are any two + ve integers, then there exists unique integers *q and r* such that

(A) a = bq, 0 < r < b (B) a = bq + r, 0 < r < b

(C) a = bq, 0 < r < b (D) a = bq + r , 0 < b < r [C]

1. According to Euclid’s division algorithms HCF of any two positive integers a *and b* with *a > b* is obtained by applying Euclid’s division lemma to *a and b* to find *q and r* such that *a = bq + r* where r must satisfy.

(A) 1< r < b (B) 0 < r < b (C) 0 < r < b (D) 0 < r < b [C]

1. If p, q are tow co-prime numbers. HCF (p, q) is:
2. p (B) q (C) pq (D) 1 [D]

6. Given that HCF (2520, 6600) = 40, LCM (2520, 6600) = 252 X k, then the value of k is:

1. 1650 (B) 1600 (C) 165 (D) 1625 [A]

7. If two positive integers *a and b* are written as *a* = x2y2 and b = xy2: x, y are prime numbers then HCF(*a ,b*) is : (A) xy (B) xy2 (C) x2y3 (D) x2y2 [B]

8. Given that HCF (26, 91) = 13, then LCM of (26, 91) is:

1. 2366 (B) 182 (C) 91 (D) 364 [B]

9. Given the LCM (91, 26) = 182, then HCF of (91, 26) is :

1. 13 (B) 26 (C) 7 (D) 9 [A]

10. If the HCF of 85 and 153 is expressible in the form **** then the value of *n* is:

1. 3 (B) 2 (C) 4 (D) 1 [B]

11. If *n* is any natural number, then which of the following expressions ends with 0 :

1. **** (B) **** (C)  (D) **** [C]

12. is:

1. A rational number (B) A whole number (C) An irrational number (D) A natural number [A]

13. Which is not an irrational number?

1. ****  (B)**** (C) **** (D) **** [D]

14. The decimal expansion of the rational numbers  will terminate after

(A) One decimal place (B) two decimal place

(C) three decimal place (D) more than three decimal places [B]

15. Which of the following is irrational? (A) 5.123123123….. (B) 5.123012300123000….. (C) 5.321321321 (D)  [B]

16. If  is a rational number (q ≠ 0), what is condition on q so that the decimal representation of  is   
 terminating?

17. If  is a rational number (q ≠ 0), what is condition on q so that the decimal representation of  is   
 non- terminating

18. Find the missing numbers if the following factor tree:

7429

(i) (ii) 7429 (iii)

x

17

2

n

2

m

2

2

2

19

3

23

9

**SA (TYPE-I)**

1. State the fundamental theorem of Arithmetic
2. Write the maximum number of factors of a prime number.
3. Is 7 x 11 x 13 + 11 a composite number?
4. The HCF of two numbers is 145 and their LCM is 2175. If one number is 725, find the other.
5. Find HCF and LCM of following using Fundamental Theorem of Arithmetic method (i) 11008 and 7344 (iI) 448, 1008 and 168
6. If ‘a’ and ‘b’ are two prime numbers, what will be the HCF of these two numbers?
7. Using prime factorization method, find the HCF and LCM of 72, 126 and 168. Also show that HCF x LCM ≠ product of the three numbers.
8. Find the greatest number which divides 2011 and 2623 leaving remainders 9 and 5 respectively.
9. Two tankers contain 850 liters and 680 liters of petrol respectively. Find the maximum capacity of a container which can measure the petrol of either tanker in exact number of times. [170]
10. In a seminar, the number of participants in Hindi, English and Mathematics are 60, 84 and 108, respectively. Find the minimum number of rooms required if in each room the same numbers of participants are to be seated and all of them being in the same subject. [21]
11. Find the greatest numbers that will divide 445, 572 and 699 leaving remainders 4, 5 and 6 respectively. [63]
12. In a school there two sections – section A and section B of class X. There are 32 students in section A and 36 students in section B. determine the minimum number of books required for their class library so that they can be distributed equally among students of section A or section B. [288 books]
13. A circular field has a circumference of 360 km. three cyclists start together and can cycle 48, 60 and 72 km a day, round the field. When will they meet again? [60 days]
14. Two tankers contain 850 litres and 680 litres of petrol respectively. Find the maximum capacity of a tanker which can measure the petrol of either tanker in exact number of times. [170 litres]
15. In a seminar, the number of participants in Hindi, English and Mathematics are 60, 84 and 108 respectively. Find the minimum number of rooms required if in each room the numbers of participants are to be seated and all of them being in the same subject. [21]
16. In a morning walk three persons step off together, their steps measure 80 cm, 85 cm and 90 cm respectively. What is the minimum distance each should walk so that he can cover the distance in complete steps? [12240]
17. An army contingent of 399 is to march behind an army band of 14 members in a parade. The two groups are to march in the same number of columns. What is the maximum number of columns in which they can march? [7]
18. Show that the number 7n cannot end with the digit zero for any natural number n.
19. Show that 9n cannot end with the digit 2 for any natural number n.
20. Consider the number 14n, where n is a natural number. Check whether there is any value of n for which 14n ends with the digit zero.

**SA (TYPE-II)**

1. (i) Show that an irrational number. (ii) Show that is an irrational number.
2. Prove that  is irrational.
3. Show that ( ) is an irrational number.
4. Show that  is an irrational number.

**LA (TYPE-I)**

1. Show that any positive even integer is of the form *4q, 4q + 2* where q is any positive integer
2. Show that any positive odd integer is of the form *4q + 1 or 4q + 3* where q is any positive integer.
3. Show that any positive odd integer is of the form *6q + 1, 6q + 3 or 6q + 5* where q is any positive integer.
4. Show that any positive odd integer is of the form *8q + 1, 8q + 3, 8q + 5, 8q + 7*.
5. Using Euclid’s division algorithm, show that the square of any positive integer is either of the form *3q or 3q + 1 for some integer q.*
6. Prove that the square of any positive integer is of the form *5q, 5q + 1, 5q + 4* for some integer q.
7. Using Euclid’s division algorithm, show that the cube of any positive integer is either of the form *9q, 9q + 1 or 9q + 8 of some integer q.*
8. Show that one and only one out of *n, n + 2, or n + 4* is divisible by 3, where n is an any positive integer.
9. Show that one and only one out of *n, n + 3, n + 6, n + 9* is divisible by 4 where n is any positive integer

**CHAPTER-3 LINEAR EQUATIONS IN TWO VARIABLES**

**MCQ/ VSA**

1. where a, b, c are real numbers is called a linear equation in two variable x and y if (a) a ≠ b (b)  (c)  (d)  [d]
2. Every solution of  is a pair of values (a) one for a and other for b (b) one for a and other for c (c) one for b and other for c

(d) one for x and other for y [d]

1. Graphically  represents a line. Every solution of the equation is a point (a) on the line representing it (b) not on the line representing it (c) on the x-axis (d) on the y-axis [a]
2. The pair of linear equations and  is (a) inconsistent (b) consistent (c) dependent consistent (d) none of these [c]
3. There are two positive numbers such that sum of twice the first and thrice the second is 39, while the sum of thrice the first and twice the second is 36. The larger of the two is

(a) 6 (b) 8 (c) 9 (d) 10 [c]

1. For what value of k, the pair of equations and, has a unique Solution?

(a) K=8/3 (b) k≠8/3 (c) k=3 (d) k≠3 [b]

1. If the pair of equations and has infinitely many solutions, then θ =

(a) 300 (b) 450 (c) 600 (d) 900 [b]

1. The value of k for which the lines , and  meet at a Point is

(a) 1 (b) 2 (c) 3 (d) 4 [a]

1. The equations  and  represent the same straight line if

(a) ad = be (b) ac = bd (c) bc = ad (d) ab = de [d]

1. The pair of equations and  represent parallel lines if

(a) a = b (b) 3a = 2b (c) 2a = 3b (d) ab = 6  [d]

1. The pair of equations y = 0 and y = 7 has

(a) one solution (b) two solutions (c) infinitely many solutions (d) no solution [d]

1. The pair of equations x = a and y = b graphically represents lines which are (a) parallel (b) intersecting at (b, a) (c) coincident (d) intersecting at (a, b) [d]
2. The father’s age is six times his son’s age. Four years hence, the age of the father will be four times his son’s age. The present ages, in years, of the son and the father are, respectively

(a) 4 and 24 (b) 5 and 30 (c) 6 and 36 (d) 3 and 24 [c]

14. For what value of k the pair of linear equations has no solution?[2]

15. Determine the value of k for which represents coincident lines. [k = 6]

**SOLVE THE GIVEN SYSTEM OF LINEAR EQUATIONS**

1. Solve the following system of linear equations.  [x = 3, y = 2]
2. Solve the following system of linear equations: [x = 1, y = 1]
3. Solve the following system of linear equations: [x =  2, y = 5]
4. Check whether the pair of linear equations and  is consistent. If yes then, solve graphically by the system of linear equations. [consistent (6,0)]
5. Solve the following system of linear equations: [x = b, y = a]
6. Solve the following system of linear equations  x ≠ 0, y ≠ 0 and hence find the value of m for which  [x = 6, y =  4, m = 0]
7. Solve the following system of linear equations graphically.  [x = 3, y = 4]
8. Solve the following system of linear equations.  x ≠ 0, y ≠ 0. [x = 1, y = 1]
9. Solve the following system of linear equations:;  []
10. Solve the following system of linear equations.  [x = 4, y = 9]
11. Solve the following system of linear equations: [x = 80, y = 30]
12. Solve the following pair of equations by reducing them to a pair of linear equations.  [x = 1, y = 1]
13. Using the method of cross-multiplication, solve the following system of linear equations.  [x = 1, y = 1 ]

14. Solve graphically the pair of equations 2x + 3y = 11 and 2x – 4y = – 24. Hence find the value of   
 coordinate of the vertices of the triangle so formed. [-2,5]

15. Solve graphically 4x – y = 4 and 4x + y = 12, shade the triangular region formed by these lines and x-   
 axis. Also, find the vertices of the triangle formed by these line and x-axis. [(x=2,y=4)(1,0)(3,0)(2,4)]

16. Solve graphically the pair of linear equations: x – y = – 1 and 2x + y – 10 = 0 . Also find the area of the   
 region bounded by these lines and x-axis. [(x=3,y=4)(area=12 sq. units)]

17. Draw the graphs of equations 4x – y – 8 = 0 and 2x – 3y + 6 =0. Shade the region between two lines   
 and x- axis. Also find the coordinate of the vertices of the triangle formed by three lines and the x-axis.

18. Draw the graphs of equations 3x + 2y = 14 and 4x – y = 4. Shade the region between these lines and y -   
 axis. Also find the coordinates of the triangle formed by these lines with y- axis.

19. Determine graphically, the coordinates if the vertices of the triangles whose equations are   
 2x – 3y + 6 = 0; 2x + 3y – 18 = 0; y – 2 = 0. Also find the area of this triangle. [3,4]

20. Solve the following system of linear equations graphically: 2(x – 1) = y and x + 3y = 15. Also find the   
 coordinates of points where lines meet the y- axis.

**WORD PROBLEMS**

1. The sum of digits of a two digit number is 15. The number obtained by interchanging the digits exceeds the given number by 9. Find the number. [78]
2. Yash scored 40 marks in a test, getting 3 marks for each right answer and losing one mark for each wrong answer. Had 4 marks been awarded for each correct answer and 2 marks been deducted for each incorrect answer, then Yash would have scored 50 marks. How many questions were there in the test? [(x=15,y=5), 20]
3. The taxi charges in a city consists of a fixed charge together with the charge for the distance covered. For a distance of 10km, the charge paid is Rs. 105 and for a journey of 15km, the charge paid is Rs. 155. What are the fixed charges and the charges per km? [f.c=Rs. 5, cpkm=Rs. 10]
4. The monthly incomes of A and B are in the ratio of 5: 4 and their monthly expenditures are in the ratio of 7: 5. If each saves RS 3000 per month. Find the monthly income of each. [10000, 8000]
5. The sum of digits of a two digit number is 11. The number obtained by interchanging the digits of the given number exceeds the number by 63. Find the number. [29]
6. Rekha’s mother is five times as old as her daughter Rekha. Five years later, Rekha’s mother will be three times as old as her daughter Rekha. Find the present age of Rekha and her mother’s age. [5years, 25years]
7. Two numbers are in the ratio 5:6. If 8 is subtracted from each of the numbers the ratio becomes 4:5. Find the numbers. [40, 48]
8. Seven times a two digit number is equal to four times the number obtained by reversing the order of its digits. If the difference between the digits is 3. Find the number. [36]
9. Nine times a two-digit number is the same as twice the number obtained by interchanging the digits of the number. If one digit of the number exceeds the other number by 7, find the number. [18]
10. A part of monthly hostel charges is fixed and the remaining depends on the number of days one has taken food in the mess. When a student A takes food for 20 days she has to pay Rs 1000 as hostel charges whereas a student B, who takes food for 26 days, pays Rs 1180 as hostel charges. Find the fixed charges and the cost of food per day. [Rs. 400, RS. 30]
11. The sum of a two-digit number and the number obtained by reversing the digits is 66. If the digits of a number differ by 2, find the number. [42, 24]
12. Half the perimeter of a rectangular garden, whose length is 4 m more than its breadth is 36 m. Find the dimensions of the garden. [B = 16 m, l = 20 m]
13. Yash scored 40 marks in a test, getting 3 marks for each right answer and losing 1 mark for each wrong answer. Had 4 marks been awarded for each correct answer and 2 marks been deducted for each incorrect answer, then Yash would have scored 50 marks. How many questions were there in the test? [x = 15, y = 5, 20]
14. If 4 times the area of a smaller square is subtracted from the area of a larger square, the result is 144m2. The sum of the areas of the two squares is 464m2. Determine the sides of the two squares. [ 8 m,20 m]
15. Solve for *x* and *y:* [x = a, y = b]
16. A person travels 600 km partly by train and partly by car. If he covers 400 km by train and the rest by car, it takes 6 hours 30 minutes. But if he travels 200 km by train and the rest by car, he takes half an hour longer. Find the speed of the car and that of the train. [x = 100 km/h, y = 80 km/h]
17. Six years hence a man’s age will be three times his son’s age and three years ago, he was nine times as old as his son. Find their present ages. [x = 30, y = 6]

18. A boat goes 24km upstream and 28km downstream in 6 hours. It goes 30 km up stream and 21km   
 downstream in 6 hours 30 minutes. Find the speed of the boat in still water. [10 km/h,2 km/h]

19. A man travels 370 km partly by train and partly by car. If he covers 250 km by train and rest by car, it   
 takes him 4 hours. But if he travels 130 km by train and rest by car, he takes 18 minutes longer. Find   
 speed of the train and that of the car. [100 km/h, 80 km/h]

20. The age of a man is three times the sum of the ages of his two children and five years hence, his age   
 will be double the sum of their ages. Find his present age. [45 yrs]

21. 2 men and 5 boys can do a piece of work in 4 days, while 4 men and 4 boys can do it in 3 days. How   
 long would it take one man alone do it and how many days would it take one boy alone to do it? [18,36]

**XXXXXXXXXXXXXXXXXXXX HAPPY HOLIDAYS XXXXXXXXXXXXXXXXXXXXX**