

Time : 1 Hour 30 Minute

STD 10 Maths  
Chapter Based Test

Total Marks : 50

Section A

\* Choose the right answer from the given options. [1 Marks Each] [7]

- The solution of the equations  $x - y = 2$  and  $x + y = 4$  is:  
(A) 3 and 1 (B) 4 and 3 (C) 5 and 1 (D) -1 and -3
- The value of  $k$  for which the system of equations has no solution is:  
 $x + 2y = 5$   
 $3x + ky + 15 = 0$   
(A) 6 (B) -6 (C)  $\frac{3}{2}$  (D) None of these
- Form the pair of linear equations in the problem, and find its solution graphically .....  
5 pencils and 7 pens together cost Rs.50 whereas 7 pencils and 5 pens together cost Rs.46. The cost of 1 pen is:  
(A) Rs.6 (B) Rs.3 (C) Rs.4 (D) Rs.5
- Choose the correct answer from the given four options:  
The value of  $c$  for which the pair of equations  $cx - y = 2$  and  $6x - 2y = 3$  will have infinitely many solutions is:  
(A) 3. (B) -3. (C) -12. (D) No value.
- Choose the correct answer from the given four options:  
One equation of a pair of dependent linear equations is  $-5x + 7y = 2$ . The second equation can be:  
a.  $10x + 14y + 4 = 0$ .  
b.  $-10x - 14y + 4 = 0$ .  
c.  $-10x + 14y + 4 = 0$ .  
d.  $10x - 14y + 4 = 0$ .
- If  $2x + 3y = 12$  and  $3x - 2y = 5$  then:  
a.  $x = 2, y = 3$   
b.  $x = 2, y = -3$   
c.  $x = 3, y = 2$   
d.  $x = 3, y = -2$
- If  $2^{x+y} = 2^{x-y} = \sqrt{8}$  then the value of  $y$  is:  
a.  $\frac{1}{2}$   
b.  $\frac{3}{2}$   
c. 0  
d. None of these.

[3]

\* A statement of Assertion (A) is followed by a statement of Reason (R).

Choose the correct option.

8. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

**Assertion:** The linear equations  $x - 2y - 3 = 0$  and  $3x + 4y - 20 = 0$  have exactly one solution.

**Reason:** The linear equations  $2x + 3y - 9 = 0$  and  $4x + 6y - 18 = 0$  have a unique solution.

- both assertion and reason are correct and reason is correct explanation for assertion
- both assertion and reason are correct but reason is correct explanation for assertion
- assertion is correct but reason is false
- both assertion and reason are false

9. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

**Assertion:** The graph of the linear equations  $3x + 2y = 12$  and  $5x - 2y = 4$  gives a pair of intersecting lines.

**Reason:** The graph of linear equations  $a_1x + b_1y + c_1 = 0$  and  $a_2x + b_2y + c_2 = 0$  gives a pair of intersecting lines if  $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$

- Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
- Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
- Assertion (A) is true but reason (R) is false.
- Assertion (A) is false but reason (R) is true

10. **Directions:** In the following questions, the Assertions (A) and Reason(s) (R) have been put forward. Read both the statements carefully and choose the correct alternative from the following:

**Assertion:** If a pair of linear equations is consistent, then the lines are intersecting or coincident

**Reason:** Because the two lines definitely have a solution.

- both assertion and reason are correct and reason is correct explanation for assertion
- both assertion and reason are correct but reason is correct explanation for assertion
- assertion is correct but reason is false
- both assertion and reason are false

\* Answer the following questions in one sentence. [1 Marks Each]

[4]

11. On comparing the ratios  $\frac{a_1}{a_2}$ ,  $\frac{b_1}{b_2}$  and  $\frac{c_1}{c_2}$ , find out whether the pair of linear equation is consistent, or inconsistent:  $5x - 3y = 11$ ;  $-10x + 6y = -22$
12. On comparing the ratios  $\frac{a_1}{a_2}$ ,  $\frac{b_1}{b_2}$  and  $\frac{c_1}{c_2}$ , find out whether the pair of linear equations are consistent, or inconsistent:  $\frac{4}{3}x + 2y = 8$ ;  $2x + 3y = 12$ .

13. Do the following equations represent a pair of coincident lines? Justify your answer:  
 $-2x - 3y = 1$  and  $6y + 4x = -2$
14. Are the following pair of linear equations consistent? Justify your answer:  
 $2ax + by = a$  and  $4ax + 2by - 2a = 0$ ;  $a, b \neq 0$

**Section B**

**\* Given section consists of questions of 2 marks each. [10]**

1. Is the pair of linear equation consistent/inconsistent? If consistent, obtain the solution graphically:  $x - y = 8$ ;  $3x - 3y = 16$
2. Is the pair of linear equation consistent/inconsistent? If consistent, obtain the solution graphically:  $2x - 2y - 2 = 0$ ;  $4x - 4y - 5 = 0$
3. Solve the pair of linear equations by substitution method:  
 $\sqrt{2}x - \sqrt{3}y = 0$   
 $\sqrt{3}x - \sqrt{8}y = 0$
4. Very-Short and Short-Answer Questions:  
 Show that the system  $2x + 3y - 1 = 0$ ,  $4x + 6y - 4 = 0$  has no solution.
5. Very-Short and Short-Answer Questions:  
 A number consists of two digits whose sum is 10. If 18 is subtracted from the number, its digits are reversed. Find the number.

**Section C**

**\* Given section consists of questions of 3 marks each. [12]**

1. Very-Short and Short-Answer Questions:  
 Write the number of solutions of the following pair of linear equations:  
 $2x + 3y = 7$   
 $(k - 1)x + (k + 2)y = 3k$
2. Solve for x and y:  
 $2x + 3y + 1 = 0$ ,  
 $\frac{7-4x}{3} = y$
3. Very-Short and Short-Answer Questions:  
 Solve  $\frac{3}{x+y} + \frac{2}{x-y} = 2$  and  $\frac{9}{x+y} - \frac{4}{x-y} = 1$
4. Find the value of a and b for which the following systems of linear equations has an infinite number of solutions:  
 $2x + 3y = 7$ ,  
 $(a + b)x + (2a - b)y = 21$

**Section D**

**\* Given section consists of questions of 5 marks each. [10]**

1. A man walks a certain distance with certain speed. If he walks  $\frac{1}{2}$  km an hour faster, he takes 1 hour less. But, if he walks 1km an hour slower, he takes 3 more hours. Find the

distance covered by the man and his original rate of walking.

2. Solve the following systems of equations:

$$\frac{3}{x} - \frac{1}{y} = -9$$

$$\frac{2}{x} + \frac{3}{y} = 5$$

**Section E**

\* **Case study based questions**

[4]

1. Mr Manoj Jindal arranged a lunch party for some of his friends. The expense of the lunch are partly constant and partly proportional to the number of guests. The expenses amount to 650 for 7 guests and 970 for 11 guests.

Denote the constant expense by ₹ x and proportional expense per person by ₹ y and answer the following questions.

- i. What is the system of linear equations representing both the situations?
- ii. Represent both the situations algebraically.
- iii. What is the Proportional expense for each person?

Or

The fixed (or constant) expense for the party is?

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