

UN

CHAPTER

12

Syllabus

|         |       |
|---------|-------|
| (5, 0)  | 15 ←  |
| (6, 5)  | -2    |
| (6, 8)  | -14   |
| (4, 10) | -28   |
| (0, 8)  | -32 ← |

Hence, the minimum of  $Z$  or minimum value is  $(-32)$ .

**Q. 3.** Refer to Q.2 of multiple choice of  $Z$  occurs at

- (A) (5, 0) (B)  
(C) (6, 8) (D)

**Ans.** Option (A) is correct.

**Explanation:** Maximum of  $Z$

**Q. 4.** Refer to Q.2 of multiple choice value of  $Z$  + Minimum value

- (A) 13 (B)



## ASSERTION

**Directions :** In the following question, an Assertion (A) is followed by a Reason (R). Mark the correct option.

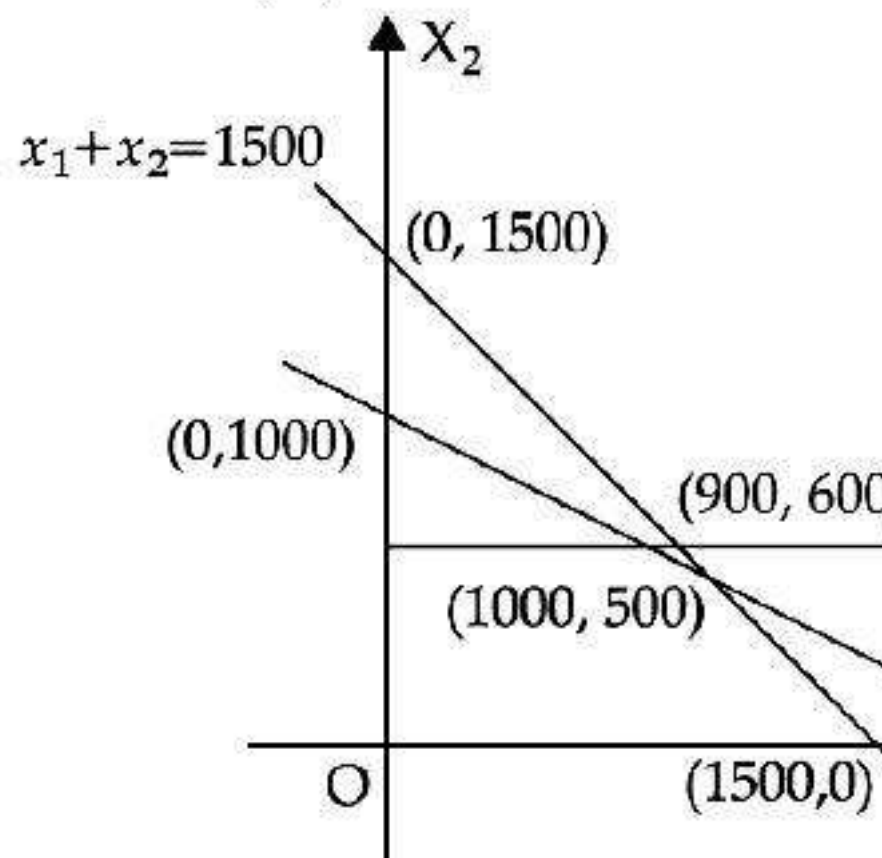
- (A) Both A and R are true and R is the correct explanation of A
- (B) Both A and R are true but R is not the correct explanation of A
- (C) A is true but R is false
- (D) A is false but R is True

**Q. 1. Assertion (A):** Feasible region is the set of all points which satisfy all of the given constraints and the objective function too.

**Reason (R):** The optimal value of the objective function is attained at the point(s) of the feasible region.

**Answer:** Option (C) is correct.

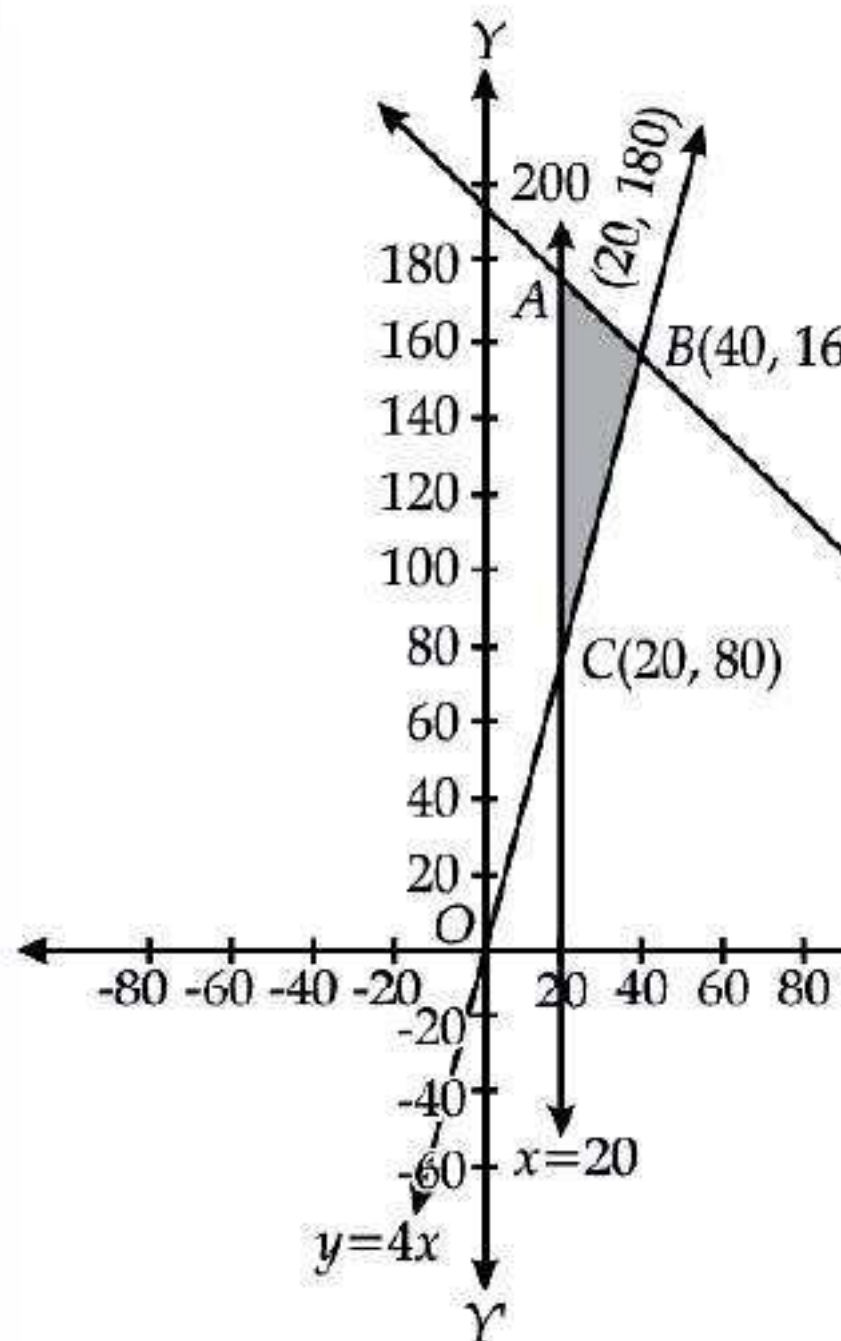
**Reason (R):**



From the graph, it is clear that the feasible region is outside.

**Ans. Option (A) is correct.**

**Explanation:** Assertion (A) and Reason (R) are correct, Reason (R) is the correct explanation of Assertion (A).



The corner points are  $A(20, 180)$   
 $C(20, 80)$

Evaluating the objective function

$$Z = 1,000x -$$

### III. Read the following text and

questions on the basis of the

A fruit grower can use two types of fertiliser in his garden, brand  $P$  and brand  $Q$ . Each bag of brand  $P$  contains 3 kg of nitrogen, 1 kg of phosphoric acid, 3 kg of potash and 1.5 kg of chlorine. Each bag of brand  $Q$  contains 3 kg of nitrogen, 3 kg of phosphoric acid, 1 kg of potash and 1.5 kg of chlorine. The garden needs at least 270 kg of nitrogen, at least 270 kg of phosphoric acid, at most 310 kg of chlorine.

|                 | kg per bag |
|-----------------|------------|
|                 | Brand      |
| Nitrogen        | 3          |
| Phosphoric acid | 1          |
| Potash          | 3          |
| Chlorine        | 1.5        |

Q. 1. The Objective function to minimise the cost of nitrogen added to garden?

(A) Maximise  $Z = 3x + 4y$