

## CASE STUDY QUESTION 49

**Read the following and answer any four questions from (i) to (v)**

Oxidation has damaging effect on metals as well as on food. The damaging effect of oxidation on metal is studied as corrosion and that on food is studied as rancidity. The phenomenon due to which metals are slowly eaten away by the reaction of air, water and chemicals present in atmosphere, is called corrosion. For example, iron articles are shiny when new, but get coated with a reddish brown powder when left for sometime. This process is known as rusting of iron. Rancidity is the process of slow oxidation of oil and fat (which are volatile in nature) present in the food materials resulting in the change of smell and taste in them.



(i) Rancidity can be prevented by

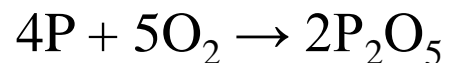
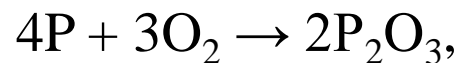
- (a) adding antioxidants                      (b) packaging oily food in nitrogen gas  
(c) both (a) and (b)                          (d) none of these.

Antioxidants and nitrogen gas prevent oxidation of food.

**Ans: (c) both (a) and (b)**

(ii) Combination of phosphorus and oxygen is an example of

- (a) oxidation    (b) reduction    (c) rancidity    (d) none of these.



**Ans: (a) oxidation**

(iii) A science teacher wrote the following statements about rancidity:

(I) When fats and oils are reduced, they become rancid.

(II) In chips packet, rancidity is prevented by oxygen.

(III) Rancidity is prevented by adding antioxidants.

Select the correct option.

(a) (I) only                      (b) (II) and (III) only

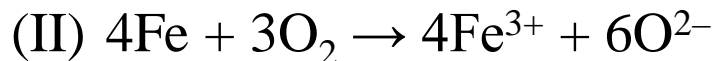
(c) (III) only                    (d) (I), (II) and (III)

The oils and fats are slowly oxidised to certain bad smelling compounds, which release foul smell. This is known as rancidity. Rancidity is prevented by filling nitrogen gas in chips packets.

**Ans: (c) (III) only**

(iv) Two statements are given below regarding rusting of iron.

(I) The rusting of iron is a redox reaction and reaction occurs as,



(II) The metallic iron is oxidised to  $\text{Fe}^{2+}$  and  $\text{O}_2$  is reduced to  $\text{O}^{2-}$ .

Select the correct statement(s).

- (a) I only      (b) II only      (c) Both I and II      (d) None of these

**Ans: (a) I only**

(v) Which of the following measures can be adopted to prevent or slow down rancidity?

(I) Food materials should be packed in air tight container.

(II) Food should be refrigerated.

(III) Food materials and cooked food should be kept away from direct sunlight.

- (a) Only II and III      (b) Only I and III      (c) Only II and III      (d) I, II and III

**Ans; (d) I, II and III**