



DOON UNIVERSITY, DEHRADUN

End Semester Examination, 5th Semester, 2017–2018

School of Physical Sciences (SoPS)

Integrated M.Sc. 5 Years (Chemistry)

Core Course

Date: December 2017

Course Title: *Org. Chem. IV: Biomolecules*

Course Code: *CYC-301*

Time Allowed: 03 Hours

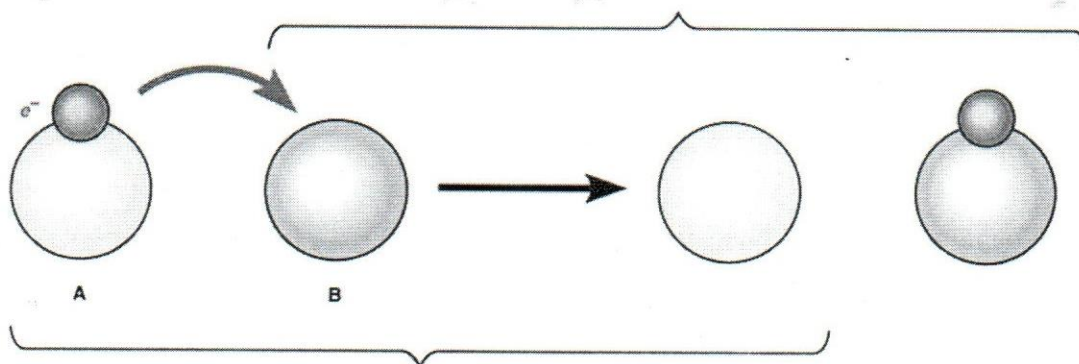
Maximum Marks: 30

Note: Attempt All Questions from Sections A,B,C.

SECTION: A

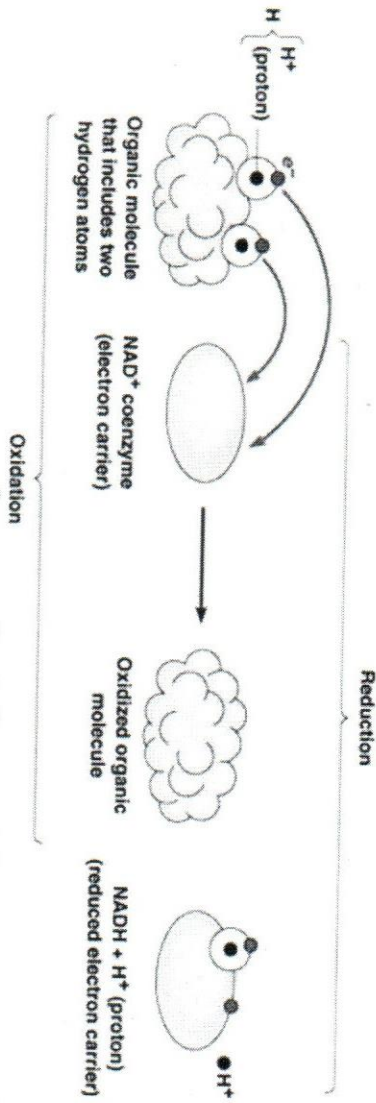
(Marks: 6)

- [1] (a) Comment on the following image and explain every aspect of the process. [½]



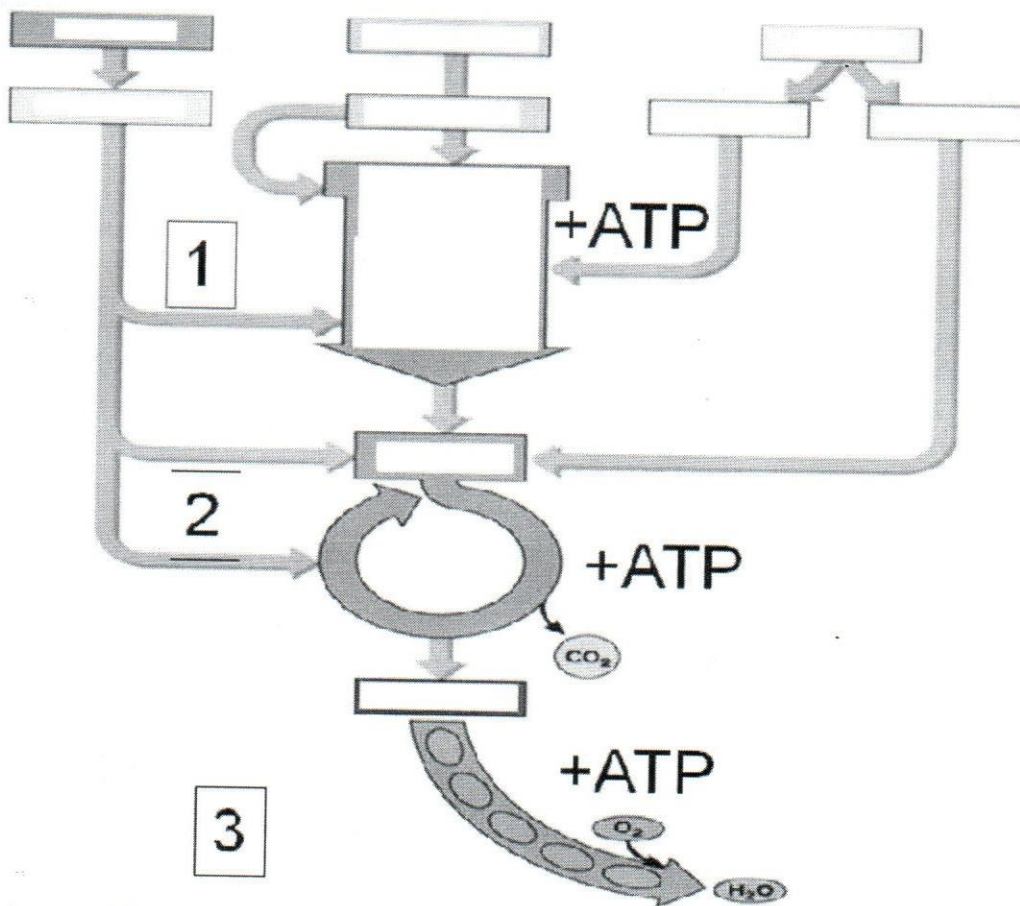
- (b) Cellular respiration is a series of reactions. Write the names of such reactions. [½]

- [2] See the following image very carefully and comment write the structures and names of NAD and NADH. [½ + ½]



[3] Write short notes on Anabolic reactions and Catabolic reactions with examples in context of metabolism. [¼ + ¼ + ¼ + ¼]

[4] Fill in the blank boxes in the following image to clarify the outlines. [½ + ½]



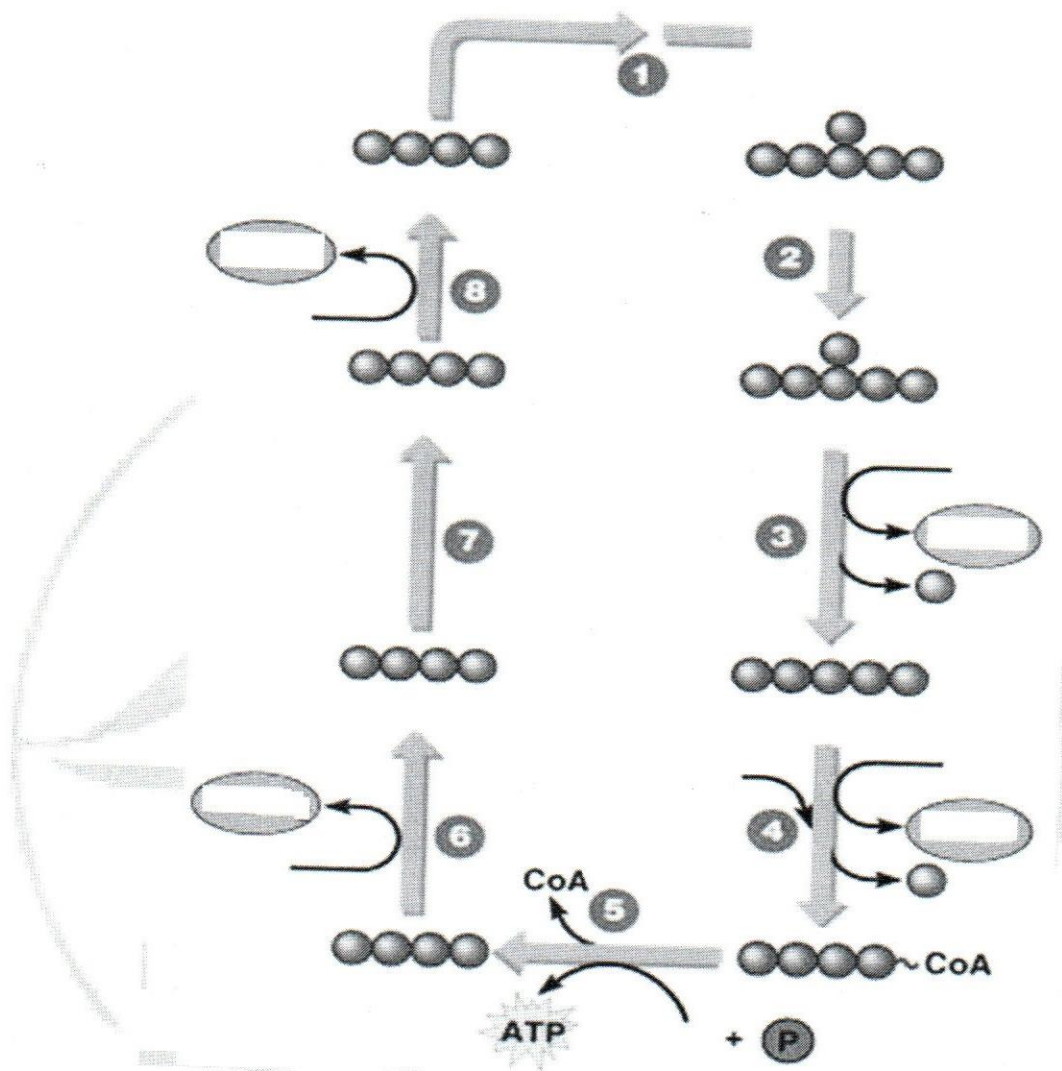
- [5] Explain why ATP is known as Energy Currency of the Cells. Also write a short note on ATP turnover. [½ + ½]
- [6] Explain the phosphate ester and phosphoanhydride bonds of ATP. Also draw the structure to explain. [1]

SECTION: B

(Marks: 12)

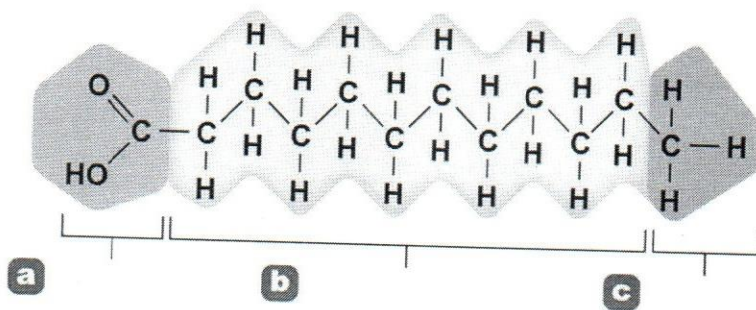
- [7] (a) Explain the difference between AMP, ADP and ATP. Draw the relevant chemical structures. [1/2]
- (b) Explain how ATP is involved in the storage and production of energy in the cells. [1/2]
- (c) Write the difference between fats and oils? [1]
- [8] (a) Write the difference between saturated and unsaturated fatty acids? [1]
- (b) Write a short note on ATP hydrolysis, and also explain the reasons why ATP hydrolysis is so highly exergonic. [1]

- [9] Comment on following image. Fill in the blanks and write the names of every product in every step. Explain the related aspects. [2]



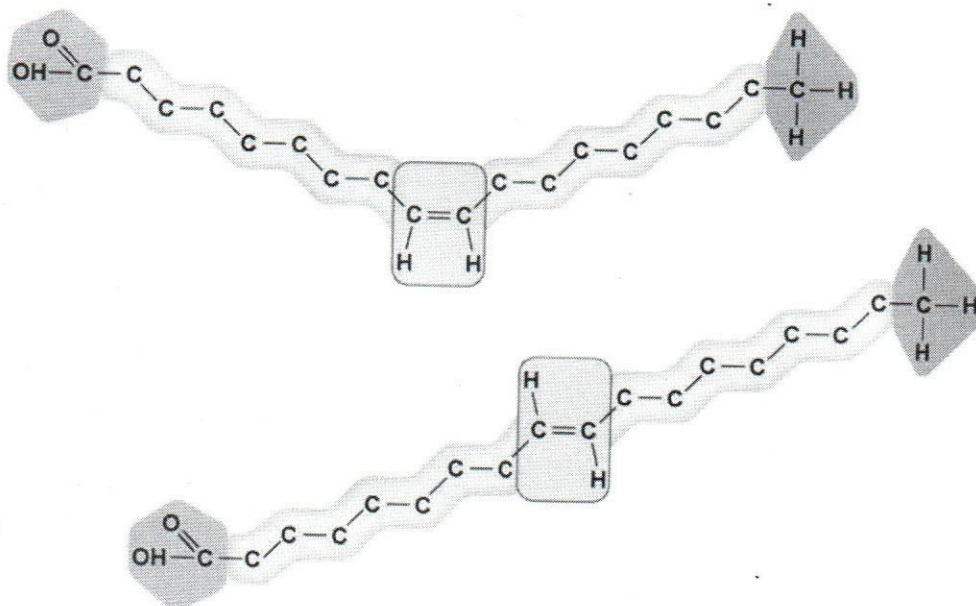
- [10] (a) What are triglycerides? Explain the formation of such compounds with the help of a general chemical reaction. [1/2]

(b) Look at the following structural formula, and write the general name of compound and molecular formula of the compound. Discuss its part a, part b and part c. [1/2]



(c) Write the structural formula of two essential fatty acids. [1]

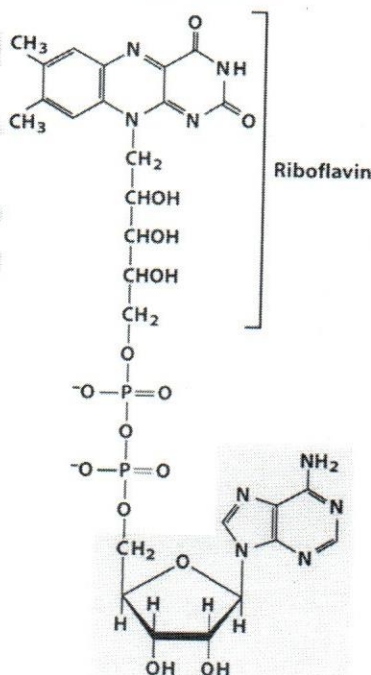
[11] (a) Differentiate between the two compounds (shown in the following image). Also discuss the significance of both types of compounds. [1]



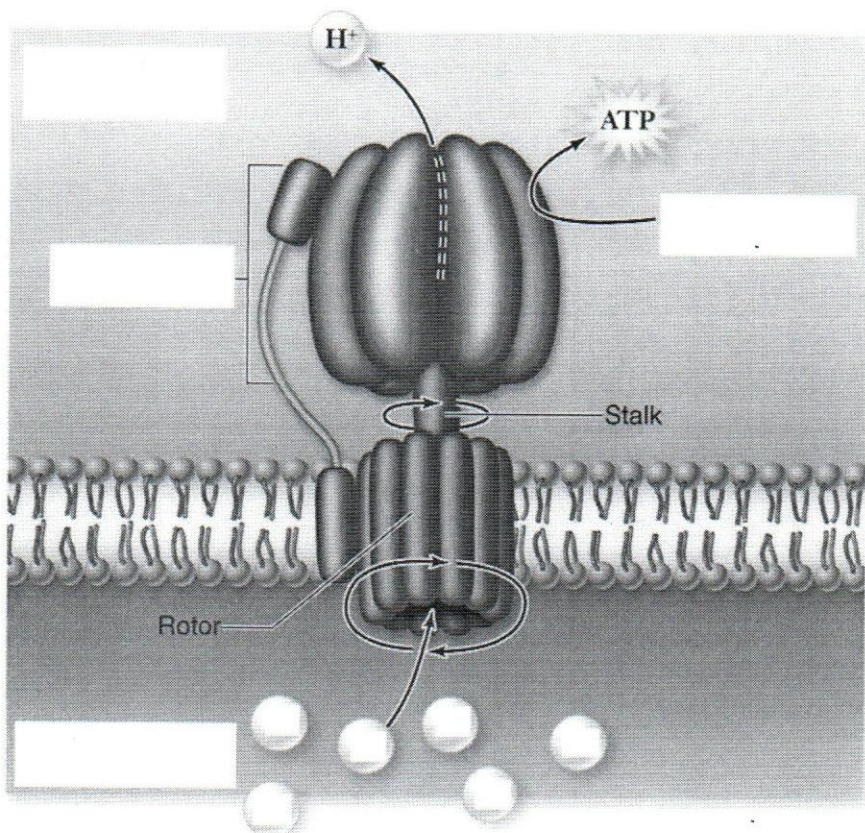
(b) Write a short note on lipids and all its types with examples. [1]

[12] (a) Write a short note on saponification along with chemical reaction. [1]

(b) Write the name of following compound. [1/2]



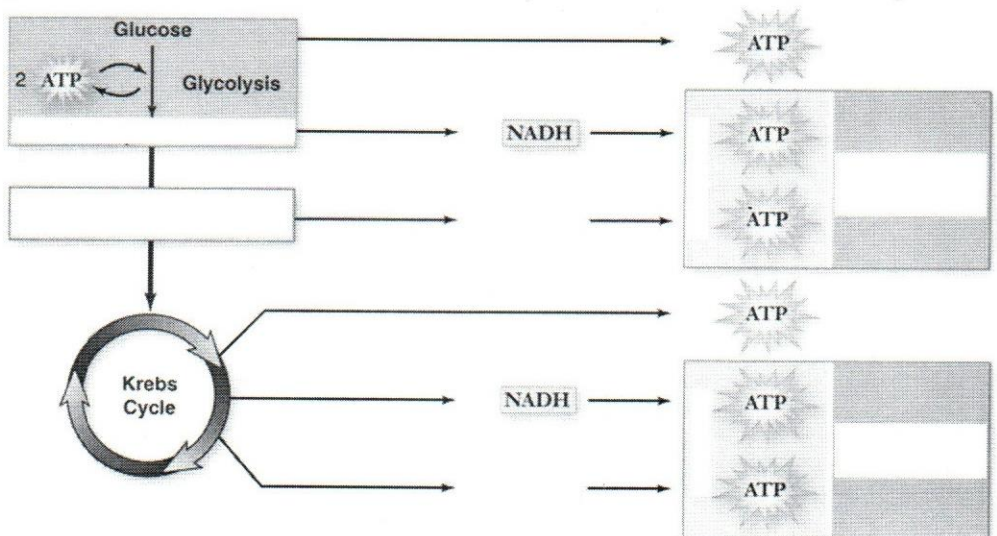
(c) Fill in the blanks in boxes in the following image. Also write the name of the process which is represented by the image, [1/2]



SECTION: C

(Marks: 12)

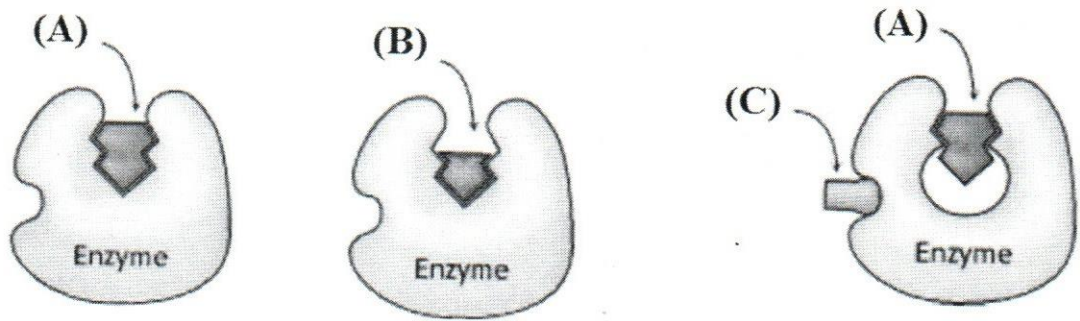
- [13] (a) Fill in the blank spaces in the following image to clarify the energy yield in different processes of cellular respiration. Also mention the difference between theoretical energy yield and actual energy yield. [2]



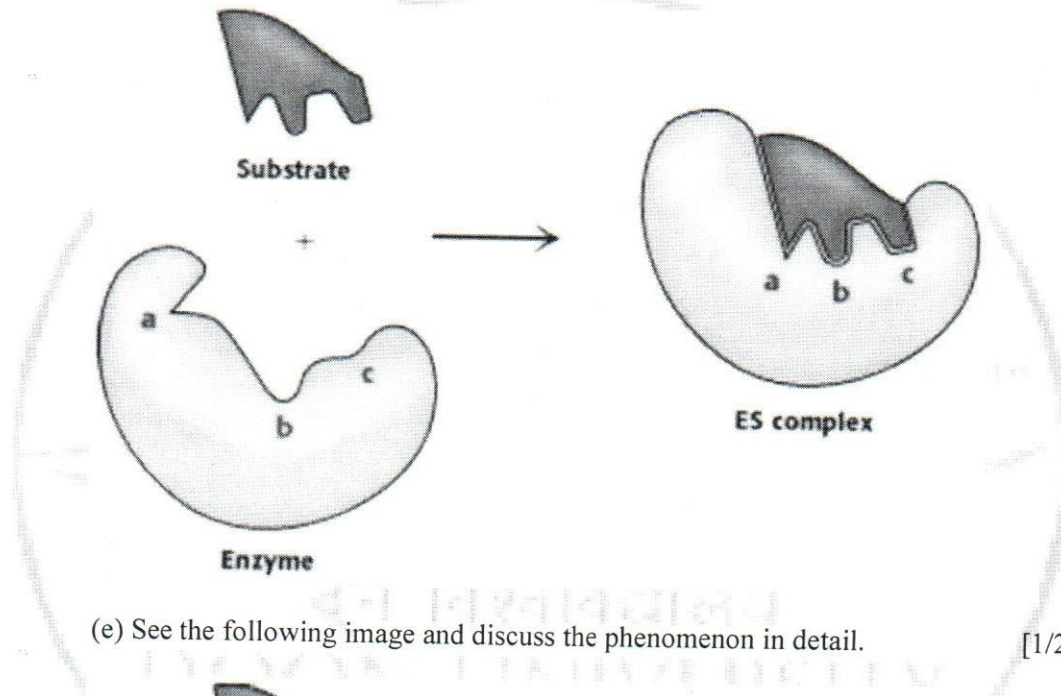
(b) Write short notes on Catabolism of Fat and Proteins.

[1/2 + 1/2]

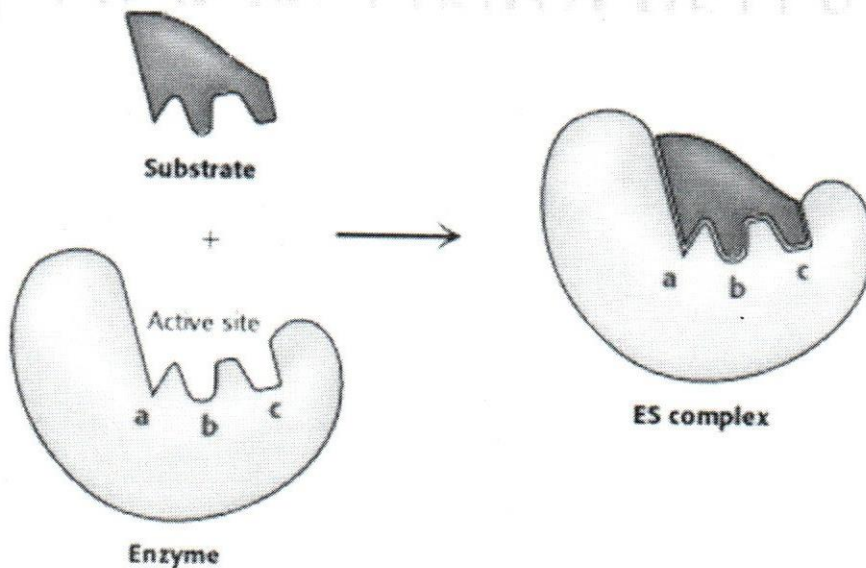
(c) See the following image carefully and discuss about **A**, **B** and **C** in details. [1]



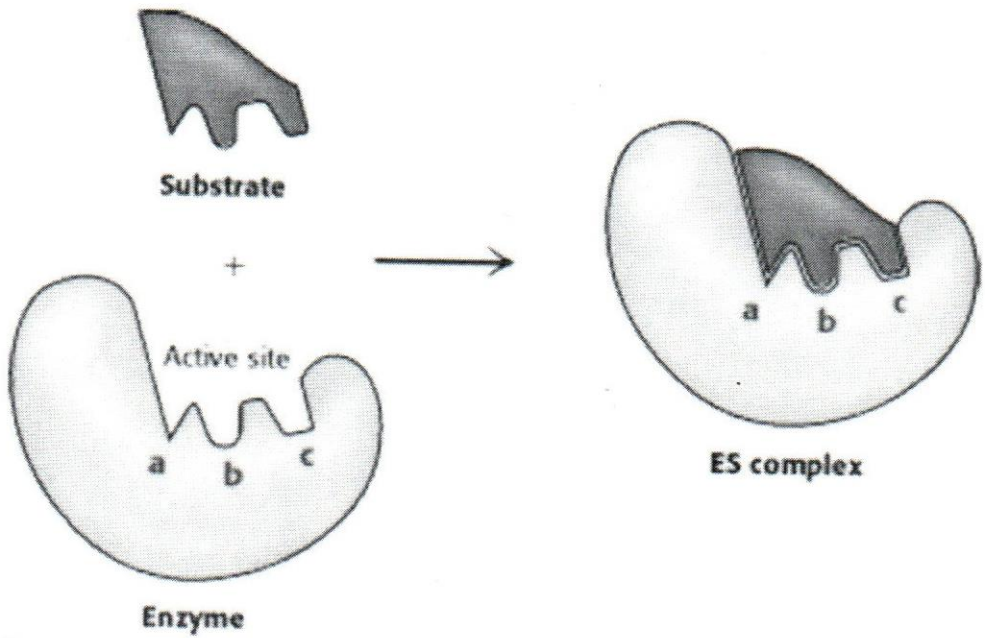
(d) See the image carefully and describe the phenomenon in detail. [1/2]



(e) See the following image and discuss the phenomenon in detail. [1/2]

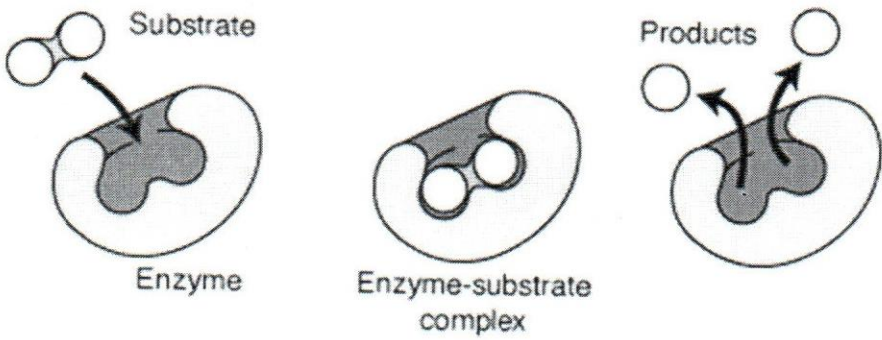


(f) See the following image carefully and describe the phenomenon. [1/2]



(g) Describe the following phenomenon in detail.

[1/2]



[14]

Describe the phenomenon, types and mechanisms of fermentation in details.

[6]