

**S. N. KANSAGRA SCHOOL
BIOLOGY (THEORY)**

STD11

Terminal examination 2014-2015

(Three hours)

Answer all questions in Part I and six questions in Part II, choosing two questions from each of the three sections A, B and C.

All working including rough work, should be done on the same sheet as, and adjacent to, the rest of the answer.

The intended marks for questions or parts of questions are given in brackets [].

Part II each point carries half mark.

NOTE: ATTACH THE QUESTION PAPER WITH THE ANSWERSHEET.

Part I

Answer all questions

Question 1

A. Mention two differences between each of the following:

[5]

1. Cartilage and bone
2. Kwashiorkar and Marasmus
3. Kinocilia and Stereocilia
4. Nucleoside and nucleotide
5. Competitive and non competitive inhibition

B. What would happen if

[3]

1. No pits are present on the cell wall
2. If there is no hepatic portal vein.
3. If the cardiac valve fails to close properly

C. Name the scientist/scientists

[2]

1. Proposed the induced fit hypothesis.
2. Proposed the fluid mosaic model

D. Elaborate the following:

[3]

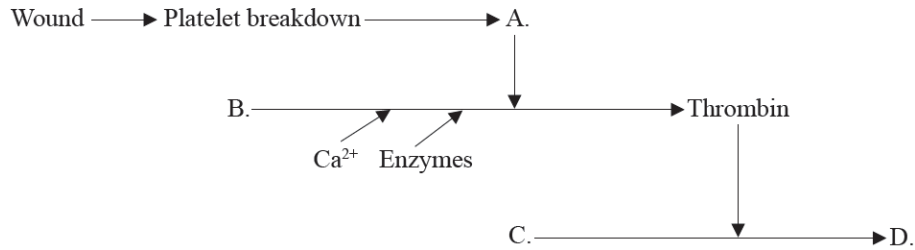
1. ANF
2. GnRH
3. FRC

E. Choose the correct option (copy and write the answer with the alphabet):

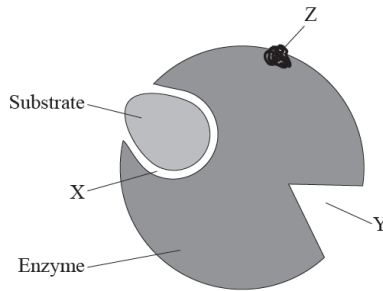
[2]

1. What is the function of the knee joint?
 - A. It permits movement in one plane.
 - B. It allows bones to glide over each other.
 - C. It facilitates movement in all planes.
 - D. It allows a wide range of movement.

2. Formation of a blood clot by damaged tissue involves the series of steps outlined in the following diagram. Which letter represents a soluble globular protein that will be converted into an insoluble protein during clot formation?



3. The diagram represents an allosteric enzyme.

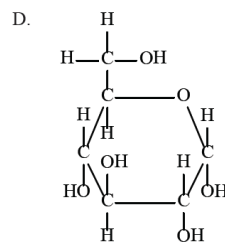
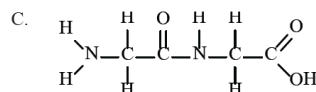
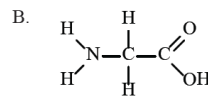
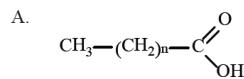


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Where would the following inhibitors be most likely to bind?

	End-product inhibitor	Competitive inhibitor	Non-competitive inhibitor
A.	X	Y	Z
B.	Y	Z	X
C.	X	Z	Y
D.	Y	X	Z

4. Which structure represents a fatty acid?



F. Give the most significant function of-

[2]

1. Microfilaments
2. Uvula

G. Give a term for

[3]

1. The effect when the oxygen dissociation curve to shift due to increase in $p\text{CO}_2$.
2. The triglycerides coated with proteins.
3. The bond between phosphate molecule and the hydroxyl group of sugar molecule.

Part II
Section A

Answer any two questions

Question 2

Fig. 2.1 shows a drawing made from an electron micrograph of two adjacent cells in a leaf.

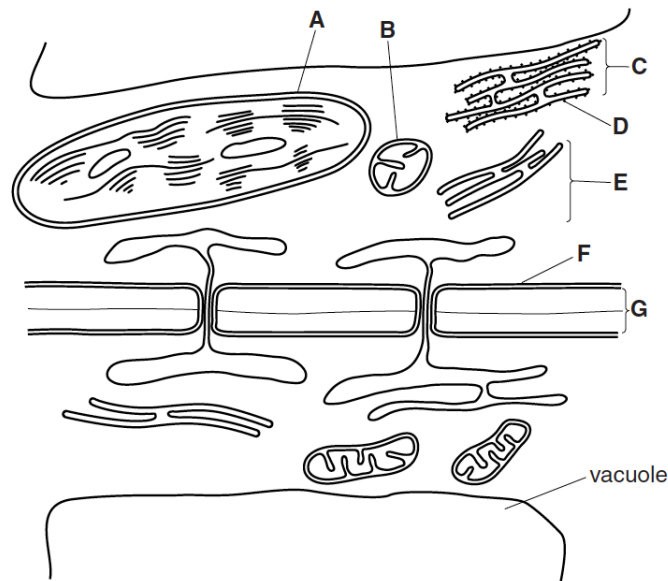


Fig. 2.1

- a. Identify and give the function of A, B, C, D, F and G. [3]
- b. What is the difference between structure F and G. (the composition and function) [1]
- c. The internal details of the structure A and B can be seen only under an electron microscope, however they are both visible under the light microscope. Explain why. [1]
- d. Draw a schematic representation of the main molecule that makes up the structure F and mention the property that it makes it most suitable for the structure. [1]
- e. Draw a well-labeled diagram of structure F as seen under an electron microscope. [4]

Question 3

The Fig. 3.1 shows an enzyme-catalyzed reaction of enzyme sucrase.

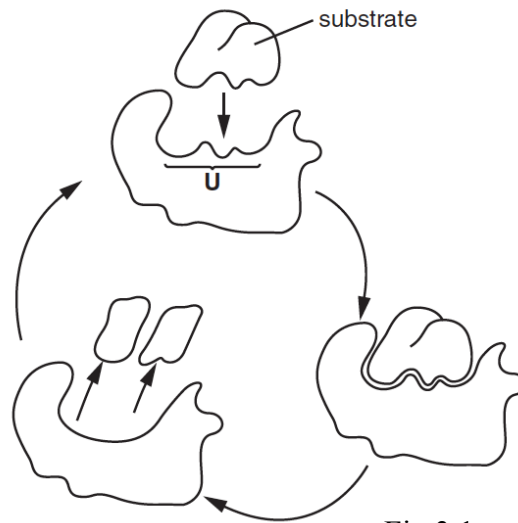


Fig 3.1

- Identify U and give its importance. [1]
- Based on the figure explain the mechanism of action. [2]
- Enzymes are globular proteins. Describe the levels of protein organization in forming a globular protein. [4]
- What will be the substrate for this reaction? Show the reaction of the substrate forming products. (Molecular structure) [3]

Question 4

Fig. 4.1 shows the dehiscence of pollen grains from the anther. The pollen grains (microspores) are formed from microspore mother cell.

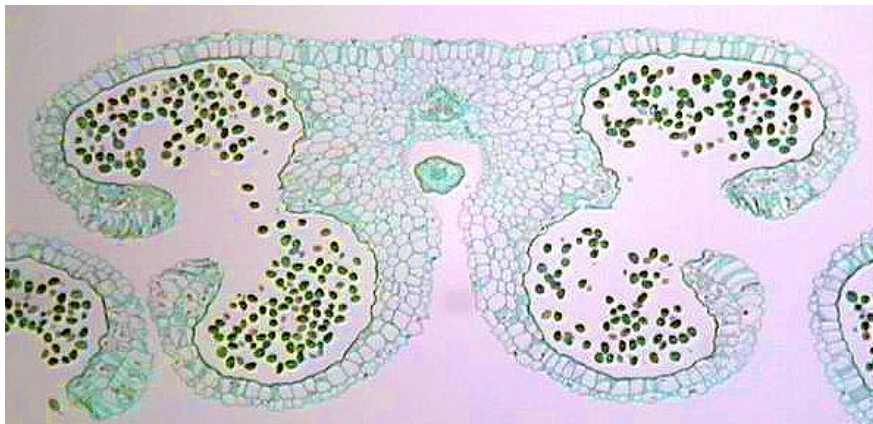


Fig 4.1

- What type of division does the microspore mother cell undergo? Which other place in the plant will show a similar type of division? [2]

- b. What type of division will the cells of the shoot apex show? Will there be a difference in the division shown by the shoot apex and the microspore cell? Draw any two stages of the division shown by the cells of the shoot apex assume that there are 4 chromosomes. [3]
- c. Name a disaccharide that is found mostly in plants. Draw its structure. [1]
- d. Plant cells can show cancerous growth due to bacterial or fungal infection. Discuss the cell cycle in terms of a normal cell and a cancerous cell. Specifying the sub stages. [3]
- e. The plant cytoplasmic inclusions are different from the animal cell. What are cytoplasmic inclusions? Give two examples seen in plant cells. [1]

SECTION B

Answer any three questions

Question 5

Mohit had a small bowl of sprouted green gram for breakfast at 7.00 am. He had a hectic work schedule and could not eat anything till 3.00 pm.

- a. List the enzymes released for the digestion of sprouted green gram and the action of the enzymes. [4]
- b. After digestion the monomer is absorbed and assimilated. How is assimilation different from absorption? [1]
- c. The absorbed nutrients are carried by the hepatic portal vein. Describe the portal system and give a schematic representation of it. [2]
- d. Comment on his blood glucose levels at 3.00 pm. What changes occur in the body to maintain blood glucose levels? [3]

Question 6

Mr. Param Saxsena organizes mountaineering camps. He trains and then takes people for treks.

The last camp he organized was to Roopkund in Uttarakhand, at an altitude of 16,499 feet.

- a. Discuss the changes the body undergoes as a person moves to higher altitudes. What is the term given to this condition in the body? How does the body cope with such a situation? [2]
- b. Describe the exchange of oxygen and its transport to the tissues. [3]
- c. The lungs are protected by the rib cage. Describe the arrangement of bones that results in a cage like structure. [1]
- d. During the training session one of the trainees has an accident. The doctor diagnosed dislocation of his shoulder joint. Name the parts that make up the shoulder joint. [1]

- e. The trainees perform various exercises during the training sessions that cause an increase in number of heartbeats. Describe the events taking place during one heart beat. [3]

Question 7

The human body shows specific symptoms that can help in diagnosis of diseases or some conditions that can predict a particular disease. This helps the doctor prescribe medicines to the patients.

- a. Based on the causes identify the diseases [2]
1. Caused due to abnormal amount of bilirubin in the blood, that may be due to blockage of bile duct.
 2. Caused due to inhalation of particles in people working in mining and industries related to pottery, ceramics, glass and construction work.
 3. Caused due to presence of crystal aggregation in the urinary tract.
 4. Caused due to decrease in thyroxin in adults.
- b. A couple is expecting their second child. The man is A-positive and the woman is B-negative. Explain the condition that the child can face due to the blood group of the parents. [3]
- c. The blood urea levels of Sooraj are extremely high. Explain the cause of the condition and the treatment measure that can be given to him. [2]
- d. Due to presence of gallstones Amit has to undergo cholecystectomy (removal of gall bladder). With the help of a diagram explain the location and the function of gall bladder in the digestive system. [3]

Question 8.

Our body maintains homeostasis by balancing different substances by different mechanisms.

Minor changes can lead to malfunctioning in the body.

- a. Hormones are secreted in minute amounts and only when required. Describe how thyroxin levels are maintained. [3]
- b. During summer and winter the body maintains water level by producing the hypertonic or hypotonic urine. Draw the diagram of the structure that is responsible for maintain the urine concentration. [4]
- c. A person can donate about 350 ml of blood once every three months. The blood volume is recovered within 24 hrs. Draw the part of the body showing the location of production of blood cells. [3]