



Ministry of Education  
Chumey Higher Secondary School  
Chummig: Bumthang  
Academic Year 2022



**TRIAL EXAMINATION**

Subject: Biology  
Class: X

Writing Time: 2 hours  
Full Mark: 100 marks

INDEX CODE: 

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Invigilator's Initial: .....

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**READ THE FOLLOWING DIRECTIONS CAREFULLY:**

1. Do **not** write for the first **fifteen minutes**. This time is to be spent reading the questions. After having read the questions, you will be given **THREE hours** to answer all questions.
2. Write your student **code number** in the space provided on the **top of the** cover page only.
3. In this paper, there are **two** sections: All **questions in section A are compulsory and attempt any SIX questions from section B**.
4. The intended marks for the questions or parts of questions, are given in brackets [ ].
5. Write **all** your answers in the **question booklet** itself.
6. Remember to write **quickly** but **neatly**.

**Section A (40 Marks)**

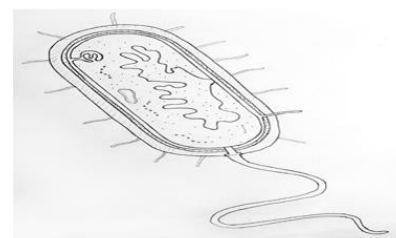
**ANSWER ALL QUESTIONS**

**Question 1**

**[25]**

**A. Directions: For each question, there are four alternatives A, B, C and D. Choose the correct alternative and circle it. Do not circle more than ONE alternative. If there are more than one circled, NO score will be awarded.**

- i. A student observed a cell under a microscope. The cell observed was as shown in figure. Which structure would you select from the list provided to conclude that the cell is a prokaryotic cell?



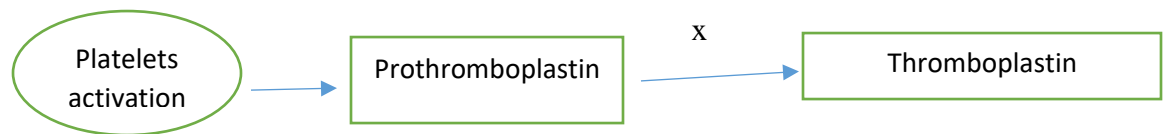
*Figure 1*

- i. Cell wall.
  - ii. Cell membrane.
  - iii. Flagellum.
  - iv. Mitochondria.
- ii. Microorganisms such as bacteria and fungi are useful as well as harmful to human health.

Which of the following describes the useful nature of bacteria and fungi?

- I As a source of food.
  - II As a source of medicine.
  - III As a causative agent of some disease.
- A. I & II  
B. I & III  
C. II & III  
D. I, II & III
- iii. A farmer desires to delay the ripening of his orange fruits so that he can fetch a better price. Which of the following hormones would you suggest?
- A. Auxin  
B. Ethylene  
C. Gibberellin  
D. Abscise acid

- iv. What is the important role played by scavengers in the ecosystem?
- A. feed on the producer                      B. recycle inorganic materials  
C. control the population of herbivores      D. consume dead animals and plant materials
- v. One variety of apple tree bears large fruit but not resistant to fungal infection. While another variety of apple tree is resistant to fungal infection that bears small fruits. The two desirable traits can be infused into a single plant by
- A cloning.  
B hybridization.  
C DNA technology  
D vegetative propagation.
- vi. An example of a reflex developed during a lifetime in response to a specific stimulus is
- A. typing.    B. yawning.  
C. sneezing.                                         D. coughing.
- vii. The substance X in the flow chart is



- A. calcium ion.    B. hydrogen ion.  
C. potassium ion.    D. magnesium ion
- viii. Digestion of which of the following will be affected, if the liver is severely damaged?
- A carbohydrates.  
B fats.  
C minerals.  
D Proteins.

- ix. A man bleeds profusely when his hand is cut. He is suffering from
- A. polycythemia  
B. xerophthalmia  
C. haemophilia  
D. sickle celled anaemia
- x. A local pickle making firm uses salt to prevent from bacterial spoilage. Salt prevents bacterial growth due to
- A. turgidity.  
B. exosmosis.  
C. endosmosis.  
D. deplasmolysis.
- xi. Dema added few drops of enzyme 'X' to a fat sample. The products formed were fatty acids & glycerol. What is enzyme 'X'?
- A. lipase  
B. lactose  
C. maltase  
D. sucrose
- xii. Which cell will have diploid number of chromosomes?
- A. testes  
B. zygote  
C. sperm  
D. ovum
- xiii. The digestive system process food into usable and unusable materials. The usable materials are absorbed by the body cells as food and unusable materials are stored in
- A. liver  
B. pancreas  
C. small intestine  
D. large intestine
- xiv. Which one of the following is NOT a hormonal contraceptive method?
- A. I-pill  
B. condom  
C. vaginal ring  
D. birth-control patch
- xv. The four human blood groups are determined based on the type of antigens. Select the features that best describe antigens.
- I. attack foreign antigens  
II. proteins produced by lymphocytes

- III. antigens are of two types A and B
- IV. protein found on the surface of RBCs
- A. I  
B. IV  
C. I and II  
D. III and IV
- xvi. which of the following will be affected, if the liver is severely damaged?
- A. carbohydrates  
B. fats  
C. minerals  
D. proteins
- xvii. A student suffering from sore throat was asked to gargle with warm saline water. Name the physiological process involved
- A. diffusion  
B. deplasmolysis  
C. endosmosis  
D. plasmolysis
- xviii. Which of the following is responsible for the transport of water from roots to the upper region in a plant?
- A. sieve tube  
B. xylem fibres  
C. xylem parenchyma  
D. tracheids and vessels
- xix. Blood platelets are also called
- A. leucocyte  
B. erythrocytes.  
C. thrombocyte  
D. monocyte.
- xx. Which one of the following statement about hormones in the reproductive system is **FALSE**?
- A. progesterone are produced in ovaries  
B. testosterone are produced in testes  
C. progesterone helps in maintaining thin endometrium  
D. testosterone is responsible for secondary sexual characteristics in male

- xxi. 'Antibiotics are used against the diseases caused by bacteria. However, some bacteria become resistant to frequently used antibiotics as it survives and even multiply in the presence of antibiotics'. The part of a bacteria which becomes resistant to antibiotics is
- A. granule. B. mesosome.  
C. plasmid. D. ribosome.
- xxii. One of the functions of bile is to
- A. digest protein. B. emulsify fats.  
C. breakdown glucose. D. increase the acidity in food
- xxiii. Which one of the following is the correct sequence of lactic acid removal by the liver once the supply of oxygen to the muscle is adequate?
- A. Lactic acid → Glucose → Oxygen    B. Lactic acid → Pyruvic acid → Glucose  
C. Lactic acid → Glucose → Pyruvic acid    D. Lactic acid → Pyruvic acid → Oxygen
- xxiv. 'One of the causes of genetic variation is sexual reproduction'. During sexual reproduction
- A genetic materials of two individuals are mixed up.  
B offspring produced are genetically identical.  
C offspring develops from single parent.  
D there is no variation between offspring.
- xxiv. The source of oxygen produced during photosynthesis comes from the
- A. photolysis of water. B. conversion of G3P to glucose.  
C. photophosphorylation of ATP. D. conversion of NADP to NADPH.

**B. Fill in the blanks with appropriate words or phrases**

**[5]**

- i. Two bacterial cells can exchange their DNA with the help of an extra-chromosomal circular DNA which is called .....
- ii. Narrow, hollow elongated cells of xylem tissue.....
- iii. The natural process involved in the recycling of kitchen waste is.....digestion.
- iv. Splitting of a single molecule of glucose into two molecules of pyruvic acid is called.....
- v. The rate of photosynthesis is maximum at optimum temperature of.....

**C. State whether the following statements are TRUE or FALSE.**

**[5]**

- i. The form of food transported from source to sinks is glucose. [            ]
- ii. Accumulation of excessive lactic acid in muscle cells can be removed by intake of more oxygen. [            ]
- iii. Lysozyme helps to kill harmful germs present in the food during digestion in the mouth. [            ]
- iv. Motor neurons carry impulses from CNS to muscles. [            ]
- v. Ascending limb of Henle's loop is permeable to water whereas the descending limb is impermeable to it. [            ]

D. Match each item under Column A with the item in Column B. Rewrite the correct pairs by writing the alphabet against the number in the Column C. [5]

| Column A  | Column B          | Column C    |
|---|-------------------|-------------|
| i. Universal recipient  | a. osmoregulation | <b>i.</b>   |
| ii. Thermo receptors  | b. Ureter         | <b>ii.</b>  |
| iii. Transports urine from kidneys to the urinary bladder.        | c. Skin           | <b>iii.</b> |
| iv. Maintaining correct balance of water and solutes in the body. | d. Blood group AB | <b>iv.</b>  |
| v. Transports urine from urinary bladder to outside               | e. heat           | <b>v.</b>   |
|   | f. urethra        |             |
|   | g. Blood group O  |             |

**SECTION B [60 MARKS]**

**ATTEMPT ANY SIX QUESTIONS**

**Question 2** **[10]**

a. Why decomposers are important in an ecosystem. Support with **TWO** points. [2]

Ans:.....

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b. Refer the table given below and answer the following questions.

| <b>Blood Group</b> | <b>Antigen</b> | <b>Antibody</b> |
|--------------------|----------------|-----------------|
| <b>A</b>           | <b>A</b>       | <b>B</b>        |
| <b>B</b>           | <b>B</b>       | <b>A</b>        |
| <b>AB</b>          | <b>AB</b>      | <b>None</b>     |
| <b>O</b>           | <b>None</b>    | <b>A and B</b>  |

i. As per the table above who would be donors for blood group O and AB? [1]

Ans:.....  
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ii. Can a person with blood group A donate blood to person with blood type B? Justify your answer with a reason. [2]

Ans:.....  
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c. You are provided with iron tablets every Thursday. Give reason. [1]

Ans:.....  
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- d. “Keeping indoor plants is always beneficial.” Do you agree or disagree with this statement? Justify your answer with **two** reasons. [2]

Ans:.....  
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- e. As a concerned citizen, how can you stop the elephants from disturbing the human settlements? Suggest any **TWO** ways. [2]

Ans:.....  
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**Question 3**

**[10]**

**a.** Differentiate between following pairs of words as per the directions given in brackets.

i. ATP and NADPH (**role in light independent reaction**). **[1]**

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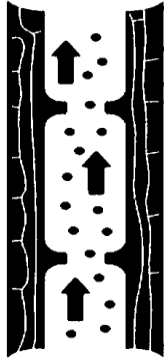
ii. Diffusion and osmosis (**function**). **[1]**

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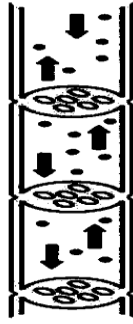
iii. Amylase and lipase (**role in digestion**). **[1]**

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- b. Diagram given below represents two important components of vascular bundle in plant. Study the diagram and answer the questions.



A



B

[2]

- i. Identify plant tissue A and B.

Ans:.....  
 .....  
 .....

- ii. What would happen if part A is removed from plant?

Ans:.....  
 .....  
 .....

- iii. Which one is associated with translocation and ascent of sap?

[2]

Ans:.....  
 .....

- c. Name two enzymes present in the pancreatic juice. How does it help in protein digestion?

[2]

Ans:.....  
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**Question 4**

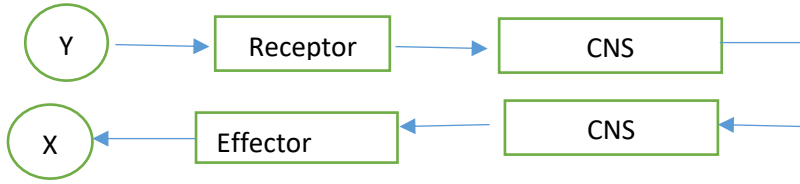
- a. Would you consider bacteria a harmful or helpful micro-organisms? Explain with any two justifications. [2]

Ans:.....  
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- b. List down any TWO effects if there are less number of WBCs in the body. [2]

Ans:.....  
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c. Study the diagram below and answer the following questions.



i. What is indicated by letter X and Y? [2]

Ans:.....  
.....

ii. What does the diagram show? Give an example for the type of action shown above in the diagram above. [2]

Ans:.....  
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iii. Which part of the body can act as Effector and Receptor [2]

Ans:.....  
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**Question 5**

a. Write TWO disadvantages of using hormonal birth control. [2]

Ans:.....  
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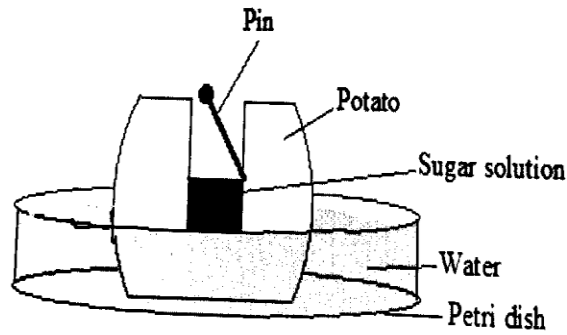
**b.** Hormone therapy uses estrogen and progesterone in treatment of certain symptoms. State ONE use of Hormone Therapy in the field of medicine. [1]

Ans:.....  
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**c.** Write down at least **Two** special features of the small intestine that maximizes food absorption. [2]

Ans:.....  
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d. Study the following experimental set up and answer the questions that follow.



i. Write down the aim of this experiment. [1]

Ans:.....  
.....  
.....

ii. What would you observe after 1-2 hours of setting up. [1]

Ans:.....  
.....  
.....

iii. Compare the tonicities of the solutions inside and outside the potato cavity. [1]

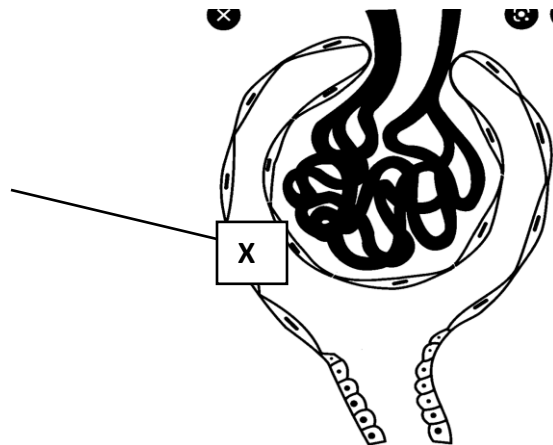
Ans:.....  
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iv. Draw a well-labelled diagram of a suitable control for the same experiment. [2]

**Question 6** [10]

a. The diagram below represents a section of nephron.



i. Identify the part labelled X. [1]

Ans:.....  
.....

ii. Describe the process of ultrafiltration during formation of urine. [2]

Ans:.....  
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b. A married couple is unable to bear children even after seven years of their marriage. As a science student, what advice would you give to the couple to solve their problem? [2]

Ans:.....  
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c. The experimental set-up shown in figure 9 is to demonstrate osmosis using a thistle funnel. Answer the questions that follow:

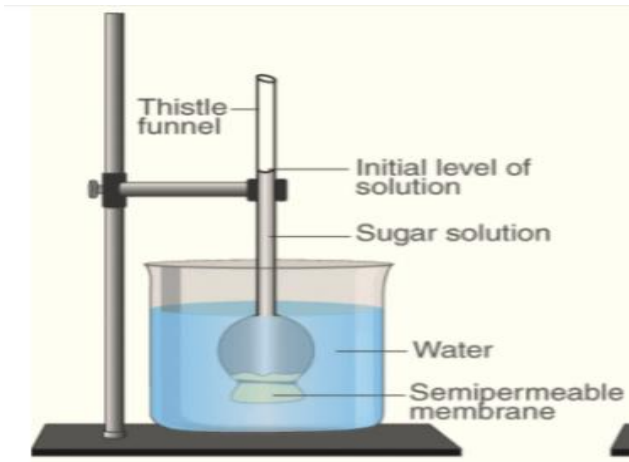


Figure 9

i. State the hypothesis of the above experiment. [1]

Ans:.....  
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**d.** Temperature is one factor that affects crop production. Optimum temperature is believed to produce maximum crop production. Mention how temperature affects the crop yield at:

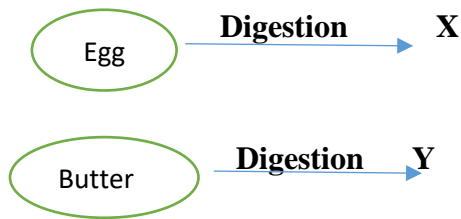
i. 40°C [0.5]

Ans:.....  
.....  
.....

ii. 35°C [0.5]

Ans:.....  
.....  
.....

**e.** The figure shows digestion of food in our body.



i. Identify 'X' and 'Y' after the complete digestion of egg and butter. [2]

Ans:.....  
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.....  
.....

- f. How is an onion cell different from a bacterial cell? Write one structural difference between the cells. [1]

Ans:.....  
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**Question 7**

- a. Outline TWO differences between selective re-absorption and tubular secretion during the formation of urine. [2]

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- b. State the functions of the following neurons [1]
- i. Sensory neuron

Ans:.....  
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.....  
.....

ii. Motor neuron. [1]

Ans:.....  
.....  
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.....

c. Classify the following into natural and conditioned reflex.  
(Blinking of eyes and tying shoe lace while conversing). [1]

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d. Why are red blood cells enucleated? Give two reasons [2]

Ans:.....  
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e. With the outbreak of COVID-19 diseases in the world, doctor and scientists have come up with several health protocols to keep ourselves safe from infection. Outline TWO preventive measures of COVID-19? [2]

Ans:.....  
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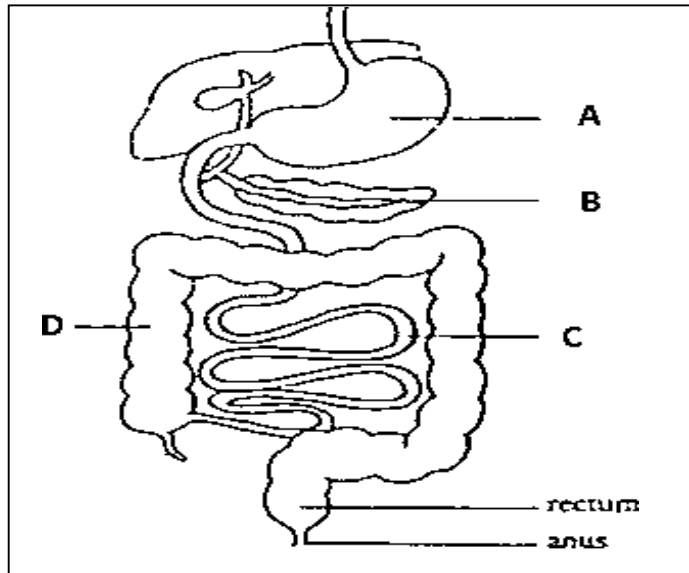
f. How nervous system in your body share certain common features with a computer? [1]

Ans:.....  
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**Question 8**

[10]

a. Study the diagram given below and answer the questions that follows



**i.** Label the parts A, B, C and D. [2]

Ans:.....  
.....  
.....

**ii.** What is the function of labeled B? [1]

Ans:.....  
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**iii.** What do you think will happen, if organ labeled C is damaged? [1]

Ans:.....  
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**iv.** How will the part labelled D affect the digestion process if it is non-functional. [1]

Ans:.....  
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**b.** Briefly explain ring experiment of translocation of food with help of diagram. [2]

Ans:.....  
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- c. Define the following terms [2]  
i. Plasmolysis

Ans:.....  
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.....

- ii. Photolysis

Ans:.....  
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- d. If you study the genetic composition of a hair cell and a skin cell, the genetic composition will be same. What type of cell division is responsible for the production of cells with same genetic composition? [1]

Ans:.....  
.....  
.....