

**MOTITHANG HIGHER SECONDARY SCHOOL
THIMPHU TROMDEE
MID TERM EXAMINATION- 2017**

Science Paper 3 (Biology)
Class: IX

Full mark: [100]
Time: [2.15 hours]

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 **one and half hours** to answer all questions.
2. In this paper, there are **two** sections: A and B. Section A is **compulsory**. You are expected to attempt **any FIVE** questions from section B. Extra attempt will be punished.
3. The intended marks for questions or parts of questions, are given in brackets [].
4. Read the directions to each question carefully and write **all** your answers in the space provided in the question booklet itself.

Section A
(50 marks)

Compulsory: Attempt all the questions

Question 1

(a) Direction: Each question in this section is provided with four possible options. Choose the most appropriate option. **[25]**

(i) Which one of the following is found both in the cell of an orange plant and a human?

- | | |
|----------------------|-------------------------|
| A. Cell wall | C. Cell membrane |
| B. Centrioles | D. Chloroplasts |

(ii) Lysosomes are called the 'suicide bag' as they destroy and dissolved their own cells. In the above statement, the main chemical present in it is

- | | |
|------------------------------|------------------------|
| A. Digestive Hormones | C. Pyruvic Acid |
| B. Digestive Enzyme | D. Fatty Acid |

(iii) Which of the following cell organelle is **correctly** matched with its function?

- | | |
|---------------------------|------------------------|
| A. Ribosome | - synthesis of protein |
| B. Mitochondria | - secretion of enzymes |
| C. Plasma membrane | - freely permeable |
| D. Centrosomes | - carries genes |

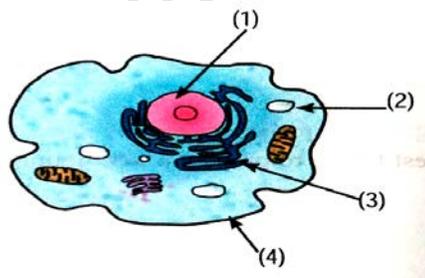
(iv) Study of structure and function of animal and plant cell is known as.

- | | |
|---------------------|-------------------|
| A. Cytology | C. Zoology |
| B. Histology | D. Botany |

(v) Photosynthesis takes place in the membranous sacs of

- | | |
|------------------|----------------------|
| A. Photon | C. Thylakoids |
| B. Stoma | D. lamellae |

- (vi) Biology is a Greek word and its meaning is study of
 A. Plants C. Life
 B. Animals D. Bacteria
- (vii) What will happen to a cell if plasma membrane is permeable?
 A. The cell would be shapeless
 B. The cell would function normally
 C. The cell would maintain its shape
 D. The function of the cell would be disturbed
- (viii) The cell organelle which is found only in animal cell is
 A. Ribosome C. Lysosomes
 B. Cytoplasm D. Centrosomes
- (ix) The pigment chlorophyll is found in the
 A. Stroma C. Outer membrane
 B. Inner membrane D. Thylakoids
- (x) Pioneers of biology who is sometimes referred to as “The father of biology” is
 A. Hippocrates C. Aristotle
 B. Charles Darwin D. Theophrastus
- (xi) Which ONE of the following lacks Nucleus?
 A. Onion cell C. amoeba
 B. Nerve cell D. Virus
- (xii) In the diagram of a cell given below, which structure is semi permeable?



- A. 1 B. 2 C. 3 D. 4
- (xiii) The rate of photosynthesis is NOT affected by
 A. carbon dioxide concentration C. temperature
 B. humidity D. light intensity.
- (xiv) Which of the following is NOT true about saliva?
 A. Lubricates the food C. Contains hormones
 B. Moistens the food D. Dissolve food
- (xv) Epiglottis guards the
 A. Mouth cavity C. Stomach
 B. Oesophagus D. Mouth of larynx

- (xvi) Light is required for the light dependent reactions of photosynthesis because
- A. Light reaction is faster
 - B. To activate chlorophyll
 - C. It energizes the water molecules
 - D. Light reaction need light
- (xvii) Transpiration occurs at a faster rate when the day is
- A. Hot , humid and windy
 - B. Hot, dry and still
 - C. Hot, dry and windy
 - D. Humid
- (xviii) The oxygen that is released during photosynthesis comes form
- A. Carbon dioxide
 - B. Water
 - C. Glucose
 - D. chlorophyll
- (xix) The calcium concentration in the roots cells of certain plants is higher than in the surrounding soil. Calcium may continue to enter the root cell of the plant by the process of
- A. Diffusion
 - B. Respiration
 - C. Active transport
 - D. Protein synthesis
- (xx) The energy rich compound produced by the end of light reaction of photosynthesis is
- A. CO₂
 - B. ATP
 - C. O₂
 - D. Glucose
- (xxi) The principal grinders and crusher of food are
- A. Incisors
 - B. Canine
 - C. Pre molar
 - D. Molars
- (xxii) The correct human dental formula is
- A. 2,1,2,3/2,1,2,3
 - B. 1,2,3,4/1,2,3,4
 - C. 2,1,2,0/2,1,2,0
 - D. 2,1,2,2/2,1,2,2
- (xxiii) Water vapour diffuse and exits the leaf through
- A. Lenticels
 - B. Hydathodes
 - C. Cut parts
 - D. stomata
- (xxiv) Both carotenoids and chlorophyll
- A. absorbs light energy
 - B. are pigments
 - C. are present in animal cell
 - D. are coloured
- (xxv) There are three kind of transpiration. Maximum transpiration occurs from
- A. Cuticle
 - B. Lenticels
 - C. Hydathodes
 - D. Stomata

(b) Match each item under column A with the most appropriate item in column B. rewrite the correct matching pair. [5]

| Column A | Column B |
|--------------------------|---------------------|
| 1. Chloroplast | a. Cellulose |
| 2. Large intestine | b. Absorbs moisture |
| 3. Cobalt chloride paper | c. Transpiration |
| 4. Staining | d. Photosynthesis |
| 5. Cell wall | e. Absorbs water |
| | f. Eosin |
| | g. Digest food |

(c) Fill in the blanks by writing suitable word(s) [5]

- i. During photosynthesis oxygen in the glucose comes from.....
- ii. Maximum number of stomata is present at the side of a leaf.
- iii. Transpiration in plants is similar to in human.
- iv. Pancreas produceswhich aid in breaking down of complex sugar into simple digestible sugar.
- v. The end products of photosynthesis are glucose, oxygen and

(d) I. State whether the following statements are TRUE or FALSE [6]

- i) Mumps is a disease of the **salivary gland**.
- ii) **Lysosomes** release energy for the cell.
- iii) **Pepsin** is the digestive enzymes in the saliva
- iv) **Chromoplasts** are the colourless plastids.
- v) **Phloem** translocate manufactured food in the plants
- vi) **Ethylene** is the gaseous plant hormone

II. Rewrite the false statement in their correct form by changing the **bold** letter only.

(e) Write **ONE** difference between the following pairs on the basis of aspect given in the bracket. [2]

- i. Guttation and Bleeding [definition]
- ii. Zoology and Biology [organism studied]

(f) Name the following. [5]

- a) Membrane around the vacuole:
- b) Biological technique used for increasing contrast by changing the colour of structure to be observed:
- c) Chemical substance that makes plasma membrane of a cell:
- d) Break down of complex food molecules into simpler form:
- e) Example of plant growth inhibitor hormone.

(g) Give reason for the following statement. [2]

- i) Viruses don't follow the cell theory.
- ii) Tooth is living

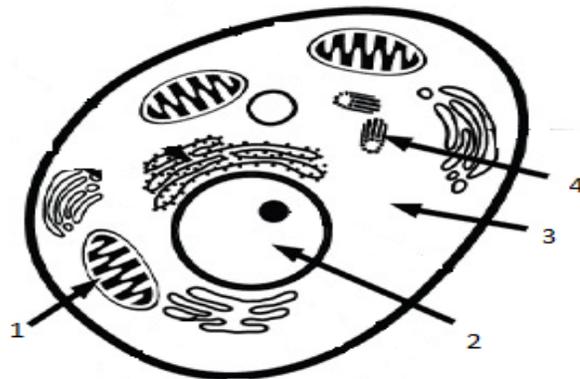
Section B (50 marks)
Attempt any FIVE questions.

Question 2

a) Answer the following questions

- i. Do you think the cell of an elephant would be larger than the cell of rat? Explain briefly. [2]
- ii. Give reason why Xerophytic plants have no leaves or leaves reduced in small size. [1]
- iii. What are plant hormones? Give **TWO** examples [2]

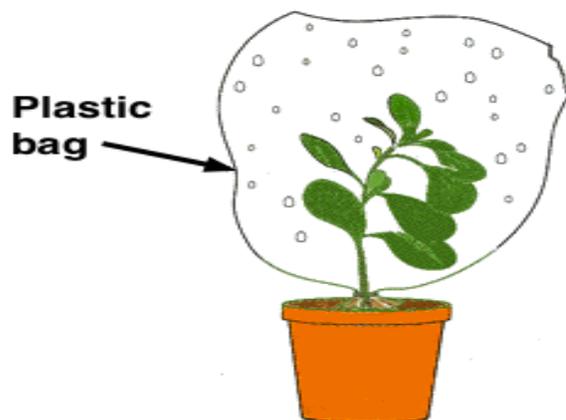
b) The diagram given below shows a cell on an organism. Study the diagram and answer the questions that follow.



- (i) Is it animal cell or plant cell? Give **ONE** reason to support your answer [2]
- (ii) Label the parts numbered 1, 2,3 and 4. [2]
- (iii) Give **ONE** function of the part numbered 1 [1]

Question 3

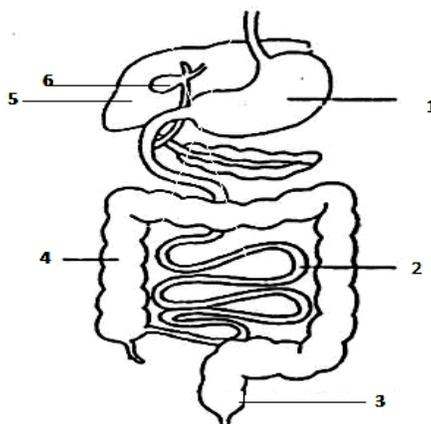
- a) An apparatus as shown in the figure was set up to demonstrate a certain process in plants. The set up was left in the sunlight for about an hour. Study it and answer the questions below.



- (i) Name the process being demonstrated [1]
- (ii) Define the above named process [1]
- (iii) Write your observation after one hour. [1]
- (iv) Suggest a control set up for this experiment [1]
- (v) Why the pot and its soil were left uncovered by the polythene bag? [1]
- b) *With Reference to green plants answer the following questions.*
- i. Why green plants are called autotroph? [1]
- ii. Name the physio – chemical process that green plants carry out. [1]
- iii. What is translocation? [1]
- iv. What are anti- transpirants? Give **TWO** examples [2]

Question 4

- a) *Study the figure below to answer the question i) to v)*



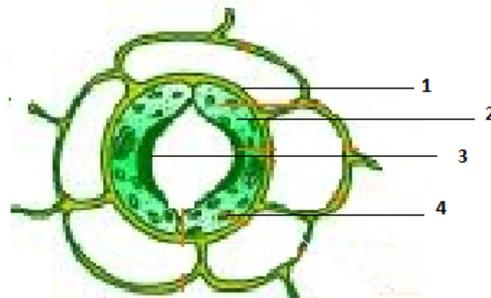
i) Name the organ system [1]

ii) Label the parts 1,2,3 and 4 [2]

iii) Complete the table [2]

| Sl no | Digestive accessory organs | Functions |
|-------|----------------------------|-----------|
| 1 | Pancreas | |
| 2 | Liver | |

b) The structure given below is found in leaves. Study it to answer the questions.



ii) Name the structure [1]

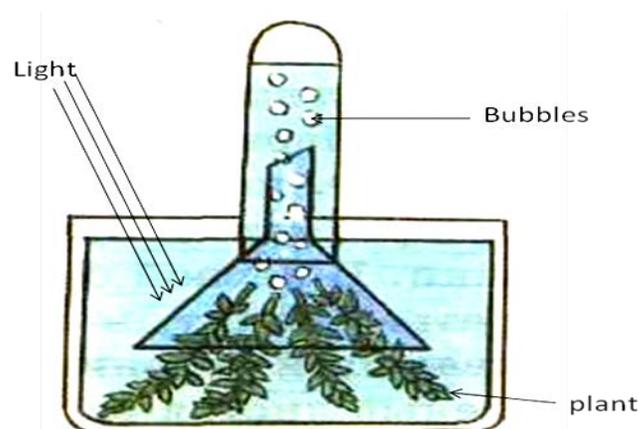
iii) Is it open or closed? [1]

iv) Label the parts number 1,2,3 and 4 [2]

v) Name the recent theory that explains the mechanism of stomatal opening and closing [1]

Question 5

a) A student set up an experiment as show below. A small water plant (elodea) was place in the bright sunlight for 5 hours. Bubbles of gas were observed.

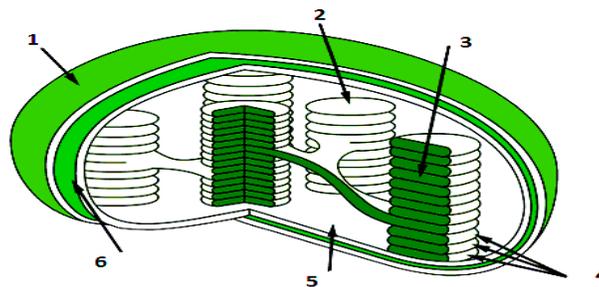


- i) Name the process being demonstrated [1]
- ii) Define the above named process [1]
- iii) Write the chemical equation for the above reaction [1]
- iv) Mention **TWO** importance of the above reaction [2]

- b) State any **TWO** theories that explain the ascent of sap in tall trees. [1]
- c) Write **TWO** differences between plant cell and animal cell. [2]
- d) Why are cells extremely small in size? [2]

Question 6

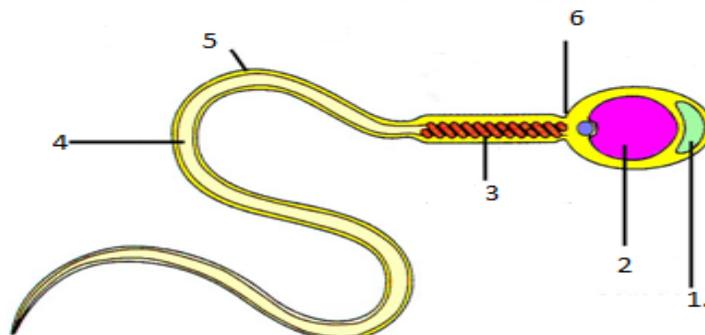
- a) *The structure given below is from green plants. Study it to answer the questions below*



- i) Name the structure [1]
 - ii) Label the parts 1, 2, 3 , 4,5 and 6 [3]
 - iii) Where is the pigment chlorophyll located in the above structure? [1]
- b) Give reason why Human cannot perform photosynthesis [1]
 - c) Study of biology is important for career opportunities [1]
 - d) State any **THREE** main points of cell theory [3]

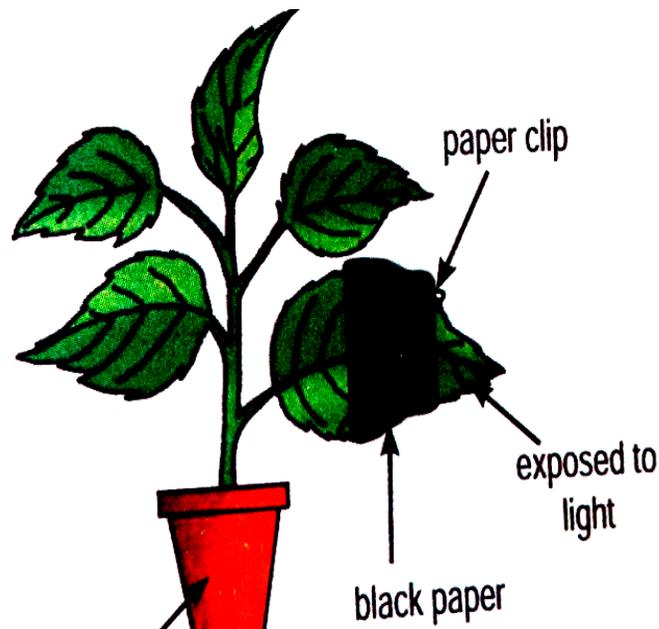
Question 7

- a) Given below is a human cell.



- i) Identify the human cell [1]
- ii) Label the parts 1, 2, 3, 4, 5 and 6 [3]
- iii) What is the role played by the above cell in fertilization? [1]

b) A student set up an experiment as shown below to test a factor for photosynthesis.



- i) What can you conclude from the experiment? [1]
- ii) Which leaf of the plant acts as a control for the experiment? [1]
- iii) State any FOUR factors that affect the rate of photosynthesis [2]
- iv) During the day, transpiration and photosynthesis are interlinked. Explain briefly [1]