



CHUMEY HIGHER SECONDARY SCHOOL  
BUMTHANG DZONGKHAG  
ANNUAL EXAMINATION-2022



Class: IX  
Subject: Biology

Full Mark: 80  
Time: 2 hours

INDEX CODE:

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**READ THE FOLLOWING DIRECTIONS CAREFULLY:**

- The first 15 minutes of the examination are for reading the paper only. Students must **NOT** start writing during this time.
- This paper has two sections A and B
- **Section A** contains objective questions and all questions are compulsory.
- **Section B** contains extended response questions, wherein you have to answer **any four** out of five questions.
- The intended marks for the questions are given in bracket. [ ].

**SECTION A**

Answer **ALL** the Questions

[Total 40 marks]

**Question 1**

a. **Direction:** Read the following questions carefully. For each question there are four alternatives. Choose the most correct alternative and circle with PEN.

- The basic structural and functional unit of all living organism is  
A cell            B genes            C organelles            D deoxyribonucleic acid
- Leaves are the food factory in plants', the pigment in leave cells responsible for trapping light energy is  
A xanthophyll            B chlorophyll            C carotene            D anthocyanin
- Plant cells and animal cells differ from each other. The cell organelle only found in plant cell from the following is  
A dictyosome            B centrosome            C chromosome            D plastid
- Tshering wanted to grow his crops in a short span of time. He can use all following plant growth promoter hormones **EXCEPT**  
A cytokinin            B ethylene            C auxin            D gibberellins

- v. The membrane of vacuole is called as  
 A cell membrane B vacuole membrane C Tonoplast D nuclear membrane
- vi. The thread like network of fibres in nucleoplasm is  
 A protein Fibre B golgi body C chromatin fibres D ribonucleic acid
- vii. The colourless plastid which stores food is  
 A chromoplast B carotene C leucoplast D chloroplast
- viii. In a typical plant cell, which component contains more amount of water?  
 A Granules B Vacuole C Cytoplasm D Nucleoplasm
- ix. Plant loses water through leaves and stems. The type of transpiration which takes place through opening of woody stems is known as  
 A stomatal transpiration C cuticular transpiration  
 B lenticular transpiration D stem transpiration
- x. Part of human digestive system which helps to crush and churn the food  
 A pharynx B stomach C esophagus D larynx
- xi. The external factor which affects the photosynthesis is  
 A light Intensity C chlorophyll content  
 B structure of leaf D protoplasm content
- xii. The source of oxygen evolved during photosynthesis is  
 A water B sunlight C carbon dioxide D leaf
- xiii. Which molecule in plant cells first captures the radiant energy from the sunlight?  
 A Glucose B ADP C Chloroplast D ATP
- xiv. The equation below represents a summary of a biological process which occurs in two phases; light and dark phase. The dark phase occurs in  
 $\text{Carbon dioxide} + \text{Water} \rightarrow \text{Glucose} + \text{Water} + \text{Oxygen}$   
 This process is completed in  
 A grana B chloroplast C cell membrane D stroma
- xv. The end product of light phase is  
 A glucose B O<sub>2</sub> and ATP C glucose and O<sub>2</sub> D CO<sub>2</sub>

- xvi. Mechanical chemical digestion occurs in the mouth. The chemical digestive process in the mouth is by the action of  
 A HCl                      B gastrin                      C amylase                      D Mucus
- xvii. The absorptive effectiveness of the small intestine is enhanced by increasing the  
 A bile juice              B enzymes                      C villi                      D gastrin
- xviii. The life span of white blood cell is about  
 A 120 days              B 12 days                      C 10 days                      D 20 days
- xix. The human heart is enclosed and protected by double membrane covering called  
 A cardiac septum    B interventricular septum    C interatrial septum    D pericardium
- xx. The sperm cell comprises of three parts head, body and tail. The main function of body is to enhance in  
 A releasing energy    B mobility                      C protection                      D digestion

b. **Write TRUE or FALSE for the following statements.** **[5 marks]**

- i. The smooth endoplasmic reticulum bears ribosomes. [      ]
- ii. Cells and tissues receive their food via blood. [      ]
- iii. Exhalation and inhalation of air is known as “cellular respiration.” [      ]
- iv. Neurons in the brain and spinal cord regenerate once damaged. [      ]
- v. Cloning is the creation of exact genetic copy of an organism. [      ]

c. **Match each item of column A against the most appropriate item in column B and re-write the correct pairs in the answer booklet.** **[5 X 1 = 5]**

Column A	Column B	
i) Capillaries	a) Grana	1.....
ii) Recombination	b) Oxygenated Blood	2.....
iii) Ethylene	c) Smallest blood vessels	3.....
iv) Arteries	d) Starch	4.....
v) Veins	e) Helps in ripening of fruits	5.....
	f) Formation of DNA	
	g) Deoxygenated Blood	

d. Fill in the blanks with correct form of word(s).

[5 X 1 = 5 marks]

- i. The divisions of nervous system consisting of the brain and spinal cord is called.....
- ii. Small intestine is for digestion and .....
- iii. Pituitary glands, though very small, is often called as the .....
- iv. Impulses of a beautiful red flower are picked up first by your.....organs.
- v. Embryo splitting technique mimics the natural process that creates.....

e. Name the following.

[5 marks]

- i. The teeth use for grinding and crushing the food materials.

Ans.....

- ii. The breakdown of complex food molecules into simpler forms.

Ans.....

- iii. The center of intellect, memory, and other higher thinking of the brain.

Ans.....

- iv. An organ having both endocrine and exocrine function.

Ans.....

- v. The variation caused by the surroundings.

Ans.....

**Section B (40 Marks)**

**(Attempt any FOUR sets of questions)**

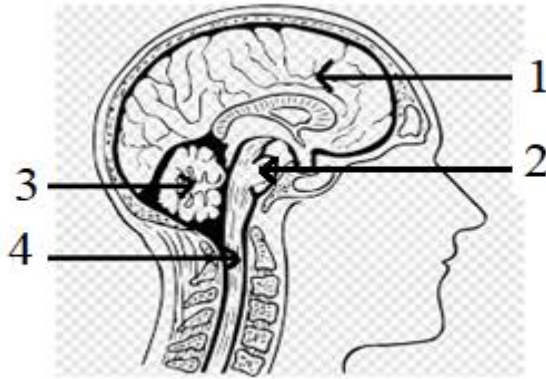
**Question 2**

- i. Explain at-least **TWO** features of modern cell theory.

[2]

Ans.....  
.....  
.....  
.....  
.....  
.....  
.....

ii. Study the diagram below and answer the following question.



a. Name the organ system displayed in the above diagram. [1/2]

Ans.....

b. Label the part 1, 2, and 3 and mention at-least one function each. [3]

Ans.....  
 .....  
 .....

c. Why do you think the nervous cell will never regenerate? Give one reason. [1/2]

Ans.....  
 .....  
 .....

iii. State and explain two external factors that affect the rate of photosynthesis. [2]

Ans.....  
 .....  
 .....

iv. Differentiate between transpiration and evaporation. [2]

Ans

Transpiration	Evaporation

**Question 3**

i. Give reason for the following. [1]

a) Robert Hooke discovered cell, but not cell organelles.

Ans.....  
 .....  
 .....

b) If you stand in front of the large audience to make a speech, your heart rate starts to increase. [1]

Ans.....  
 .....  
 .....

c) Nucleus are known as ‘control room of factory’. [1]

Ans.....  
 .....  
 .....

ii. Expand the following [ 4 x 1 = 4]

- a. GH .....
- b. DNA .....
- c. ATP .....
- d. GMO .....

iii. Figure on the right shows one of the parts of the respiratory system. Answer the question **a** through **c**.

a. Identify the phenomenon. [1]

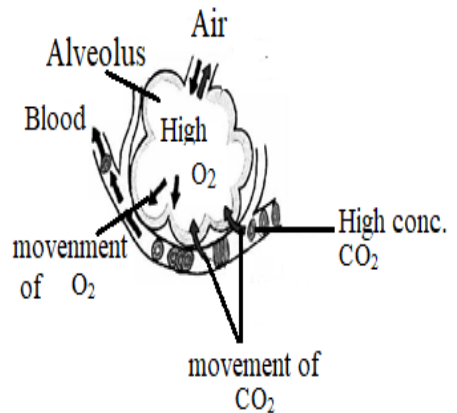
Ans.....

b. Name the parts of respiratory organ. [1]

Ans.....  
 .....

c. What does arrows signify? [1]

Ans.....  
 .....  
 .....



**Question 4**

i. Write at least two differences between animal cell and plant cell. [2]

Ans

An animal cell	Plant cell
1.....	1.....
2.....	2.....

ii. Name the organs against their function [2]

a) Organ that secretes pancreatic juice

Ans.....

b) Organ that secretes bile

Ans.....

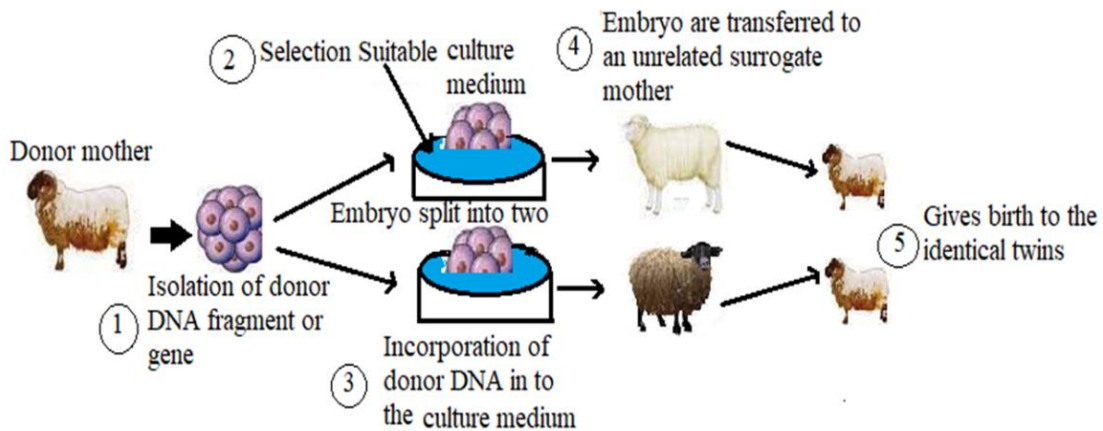
c) Pump the blood

Ans.....

d) Feel and touch

Ans.....

iii. Study the figure below and answer to the following questions.



a) Name the reproductive technique used in above process. [1]

Ans.....

b) What do you understand by word surrogate mother? [1]

Ans.....

c) Why do you think genetic engineering is very useful in our life? Give **TWO** reasons. [2]

Ans.....  
 .....  
 .....  
 .....

d) Mention one moral issue and one ethical issue raise for cloning animals. [2]

Ans.....  
 .....  
 .....

**Question 5**

i. Tashi is one of the well-known farmers in the Bumthang dzongkhag. She wants to improve her quality of potatoes in the coming year. Suggest some of the ways to improve the traits of potatoes through selective breeding. [2]

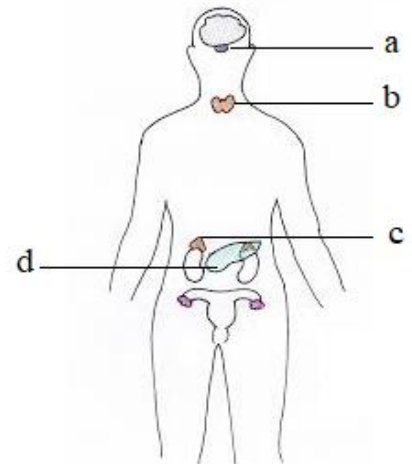
Ans.....  
 .....  
 .....  
 .....  
 .....

ii. Differentiate between the following pairs of words. [2]

a. DNA	RNA
1.....	1. ....
b. Gene	Chromosomes
1.....	2.....

iii. The figure in right represent the outline of human body. Locate the position and label parts of endocrine glands. [2]

Ans.  
**a.** .....  
**b.** .....  
**c.** .....  
**d.** .....





iv. Draw a neat labelled diagram of human neuron by using the parts given in the box below.

Dendrite    axon    myelin sheath    node of Ranvier    cell body    nucleus

[3]

v. Mention the primary function of the following Neurons: [3]

a. Sensory neuron

Ans.....  
 .....

b. Motor neuron

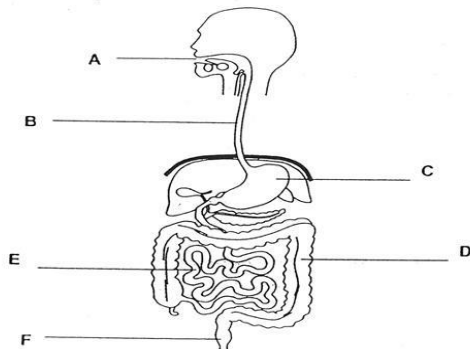
Ans.....  
 .....

c. Inter neuron

Ans.....

**Question 6.**

i. Study the diagram below and answer the questions following questions through a to c.



a) Name the parts labeled B, C, D and F. [2]

Ans.....  
 .....  
 .....

b) Which organ system is displayed in above diagram? [1]

Ans.....

c) Write down the main function of the part labeled C? [1]

Ans.....

.....

.....

ii. How will the rate of transpiration be affected by the increase in following factors? [3]

[3]

a. Intensity of light

Ans.....

.....

.....

b. Temperature

Ans.....

.....

.....

c. Humidity

Ans.....

.....

.....

iii. Circle the odd one in the following list given below. [3]

[3]

- |    |          |       |             |          |
|----|----------|-------|-------------|----------|
| a. | Arteries | Veins | Capillaries | Heart    |
| b. | Canine   | Mouth | Molars      | Incisors |
| c. | Head     | Nose  | Eyes        | Skin     |