



ཤེས་རིག་ལྷན་ཁག།  
 ལུ་ཏིག་ཐང་འབྲིང་རིམ་སློབ་གྲྭ་ཤོང་མ།



**MOTITHANG HIGHER SECONDARY SCHOOL  
 THIMPHU THROMDE**

“Every child is **inspired** to learn and **empowered** with **wisdom** to excel in life”

**ANNUAL EXAMINATION 2018**

**Class:IX**

**Writing time: 2 .15Hours**

**Biology.**

**Thursday 15<sup>th</sup> Nov. 2018**

**Name:.....Roll.no.....Class.....Section.....**

Invigilator’s Initial

**Total marks: 100**

For Teachers use only														
	Section A							Section B						
Question Number	Question 1							Qn2	Qn 3	Qn 4	Qn 5	Qn 6	Qn 7	Qn 8
	a	b	c	d	e	f								
<b>Marks</b>	<b>25</b>	<b>5</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>4</b>		<b>10</b>						
<b>Total Marks Awarded</b>														
<b>Teacher’s Initial</b>														

**Read the following directions carefully.**

1. Do not write for the first 15 minutes. This time is to be spent reading over the questions. After having read over the questions the time given at the top of this paper is the time allowed for writing the answers.
2. On the space provided above, write your name, class and index number.
3. In this paper there are two sections – A and B. Section A is **compulsory** and you are expected to attempt **any five questions** from Section B.
4. The intended marks for questions or parts of the questions are given in the bracket.
5. Read the directions to each questions carefully and write your answers neatly in the space provided for section A [question 1a to e]. For Section B write down the answers in the answersheet provided to you.

## Section A (50 Marks)

*Compulsory: Attempt all questions.*

### Question I

- a) 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 is more than one choice circled, No score will be awarded. [1×25=25]
- The cell organelle which is responsible for the inter-cellular digestion and provides energy during cell starvation is-  
A Ribosome. C Mitochondria.  
B Lysosome. D Endoplasmic Reticulum
  - The purpose of adding iodine solution during the preparation of onion cell observation is to-  
A stain the nucleus  
B stain the cytoplasm  
C be able to see the cell parts clearly  
D prevent the onion peel from drying up.
  - The water and minerals from the roots are moved upward by a process called ascent of sap. All the following are mechanism of ascent of sap EXCEPT-  
A Root pressure. C Transpirational pull.  
B Physical force. D Active transportation.
  - The plant hormones are categorized as growth promoters and growth inhibitors. The hormones which inhibits growth and is considered as “stress hormone” is-  
A Auxins. C Gibberellins.  
B Cytokinins. D Abscisic Acids.
  - The correct overall balanced chemical equation of photosynthesis is –  
A.  $6\text{CO}_2 + 12\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 + 6\text{H}_2\text{O}$ .  
B.  $6\text{CO}_2 + 12\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2 + 6\text{H}_2\text{O}$ .  
C.  $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 + 6\text{H}_2\text{O}$ .  
D.  $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 + \text{H}_2\text{O}$ .
  - The structure in the small intestine which increases the surface area for the absorption of digested food is-  
A. Villi. C. Capillaries.  
B. Ileum. D. Lymphatic vessels.
  - Segmentation is the process by which absorption of nutrients is increased by mixing the food. The place where segmentation takes place is-  
A. Ileum C. Jejunum  
B. Colon D. Duodenum
  - Valves are structures which allow the blood to flow only in one direction and there are four valves present in the heart. The bicuspid valve is present –  
A. between right auricle and ventricle  
B. between left auricle and ventricle.  
C. at the base of pulmonary artery.  
D. at the base of aorta.
  - The characteristic feature that best describes the blood vessel, artery is-  
A. thin muscular tissue. B. has pocket valves.

- C. narrow lumen  
D. elastic.
10. The respiratory disorder that results in the permanent damage to the alveoli is-  
A Asthma. C Lung cancer.  
B Bronchitis. D Emphysema.
11. The amount of air that can be forcibly exhaled after normal exhalation is the-  
A Expiratory reserve volume C Residual volume  
B Inspiratory reserve volume D Vital capacity
12. The part of the nervous system that is responsible for preparing the body for an abnormal situation is-  
A Central Nervous system. C Sympathetic Nervous system.  
B Somatic Nervous system. D Parasympathetic Nervous system
13. The structure in the brain that connects the two hemisphere of cerebellum is-  
A Pons. C Hypothalamus.  
B Thalamus. D Corpus callosum.
14. Hormones are the chemical regulators of the body. The hormone that ensures the development of a person's immune system is produced by -  
A Thymus gland. C Adrenal gland.  
B Thyroid gland. D Parathyroid gland.
15. Dema was found to be suffering from a disease with the symptoms of frequent urination, high glucose level in the blood and loss of weight. The hormones responsible for the cause of this disease is the-  
A Insulin C Oxytocin  
B Glucagon D Somatostatin
16. During ovulation phase of menstrual cycle, the hormone which is at its highest concentration is-  
A Oestrogen. C Luteinizing hormone.  
B Progesterone. D Follicle stimulating hormone
17. There are four important theories of evolution. The statement "survival of the fittest" was included in the theory proposed by-  
A August Weismann. C Huxley  
B Larmarck D Darwin
18. Identical twins are genetically same but they might exhibit different personalities, tastes and aptitude due to-  
A Genetic variations. D Genetic and Environmental variations.  
B Individual variations.  
C Environmental variations.
19. Cloning is the process of producing genetically identical individuals. All the following are procedures involved during cloning EXCEPT –  
A Nucleus of the egg is removed.  
B Nucleus of the body cell is put into the egg.  
C The cloned embryo is transferred into the female host.



c. Fill in the blanks by writing suitable word/s. [5]

- i. The mineral elements are absorbed by the roots by the process of\_\_\_\_\_
- ii. The dead remains of plants and animals preserved in sedimentary rocks are called\_\_\_\_\_
- iii. The in-folding inner membrane of mitochondria is known as\_\_\_\_\_
- iv. The cells or tissues collected for micropropagation is known as.....
- v. The organisms which can maintain a constant body temperature are called\_\_\_\_\_

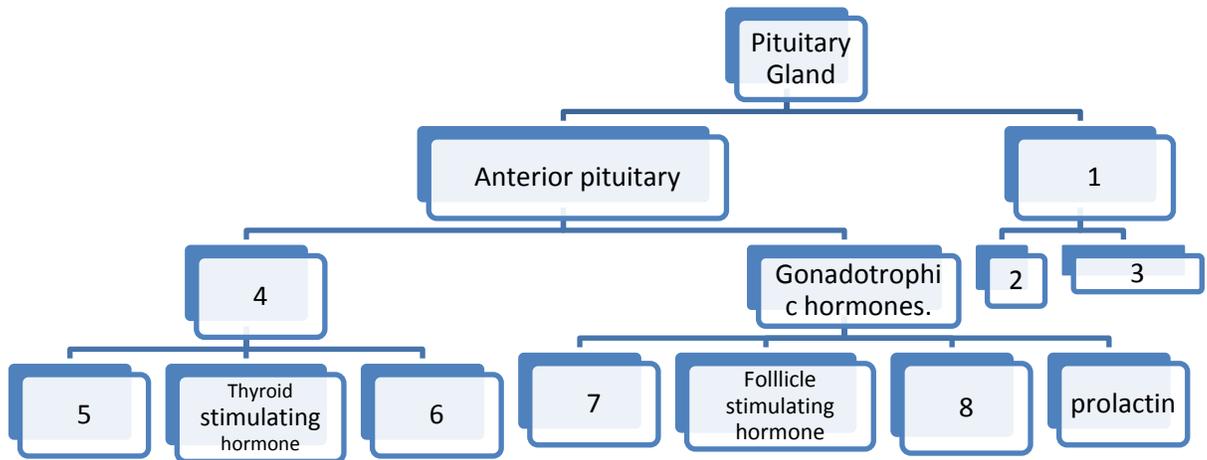
d. State whether the following statements are TRUE or FALSE. Re-write the FALSE statement by changing the word/s underlined. [5]

1. Cell wall is selectively permeable.
  
2. Uniformly shaped teeth in the animals are called homodont.
  
3. Embryo splitting is a kind of cloning which mimics identical twins.
  
4. The contraction phase of the heart is called diastole.
  
5. Epilepsy is a mental disorder caused due to substance abuse.

e. Name the following [5]

1. The inner protective membrane covering of the lungs.
  
2. The wave of electrical distribution that passes over the nerve cell.
  
3. A patterned use of a drug in which the user consumes the substance which are harmful to themselves and others.
  
4. A muscular sheath below the lungs which helps in inspiration and expiration.
  
5. The plasma from which protein fibrinogen has been removed.

- f. Copy and complete the concept map given below based on pituitary gland. You may write the answer on the answer sheet against the number given. [4]



**Section B (50 marks)**

*Attempt only FIVE Questions*

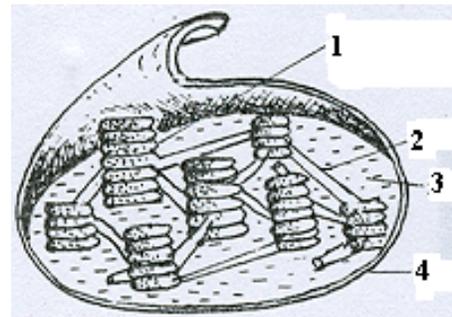
**Question 2**

- a) Complete the table given below with appropriate word/s. The answer can be written in the answer sheet against the number given. You may write only ONE function and ONE characteristic. [3]

Cell parts	Characteristic	Function
Centrosome	1	2
Ribosome	3	4
Lysosome	5	6

- b) Study the diagram given below and answer the questions that follow.

- (i) Label the parts 1 to 4.[2]
- (ii) Where is the structure usually found in the plants?[½ ]
- (iii)What is the importance of the structure to the plants?[ ½ ]



c) Answer the following questions based on health and harmful substances.

- i) The impact of alcohol abuse is immense on both the family and the society. If you were a policy maker, how will you reduce alcohol abuse in the country? [2]
- ii) Drug abuse is on the rise and many of our youths are indulging in it. What do you think you can do as a citizen of this country to help curb this pertinent issue? [2]

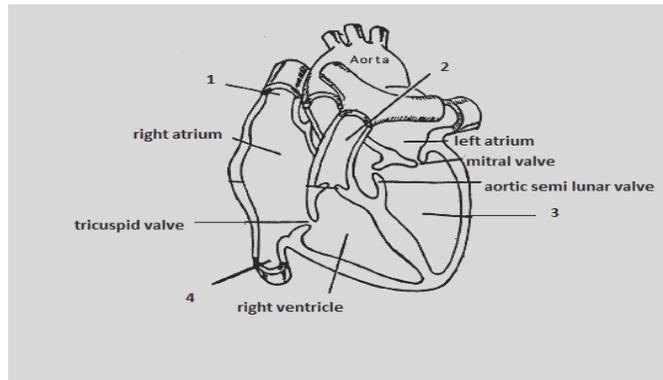
**Question 3**

a) Answer the following questions on digestive system.

- i) List down all the accessory glands of the digestive system and describe the role of at least TWO of the accessory glands. [3]
- ii) Construct a flow chart for the digestion of food, starting from mouth till anus. [2]

b) The diagram given below represents human heart. Answer the questions related to it.

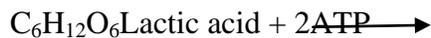
- (i) Label the parts 1 to 4. [2]
- (ii) Why are the walls of the ventricles thicker than the walls of the auricles? [1]
- (iii) Identify the valves present between the two chambers of the heart. [1]



- c) Human cloning is banned as it is against the law of nature. What is your opinion on this? Support your answer with strong justification. [1]

**Question 4**

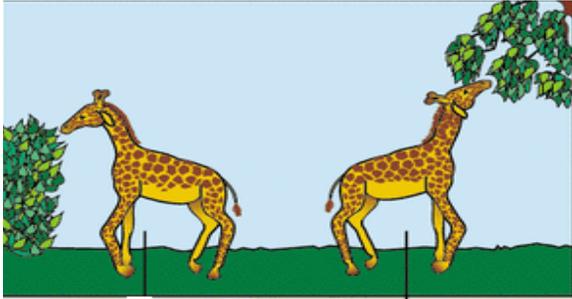
- a) Draw a well labeled diagram of a neuron. You should label all the important parts of the neuron. [2+2]
- b) Given below is an overall chemical reaction of a certain process. [3]



- i) Name the process.
  - ii) Is this reaction applicable to animals or plants?
  - iii) Name the tissue in which this reaction may occur.
- c) Explain the steps involved in tissue culture. [3]

### Question 5

a) Study the diagram below and answer the following question.



- i. Name the theory that explains why a giraffe has long neck. [1]
- ii. How does this theory contradict with the theory of Neo-Darwinism. [1]
- iii. In what ways, this theory is similar to the theory of natural selection. [1]

b) Differentiate between the following pairs of words by giving only ONE point of difference. [4]

- 1) Transpiration and Evaporation
- 2) Guttation and Bleeding
- 3) Cuticular transpiration and Lenticular transpiration.
- 4) Light Reaction and dark reaction.

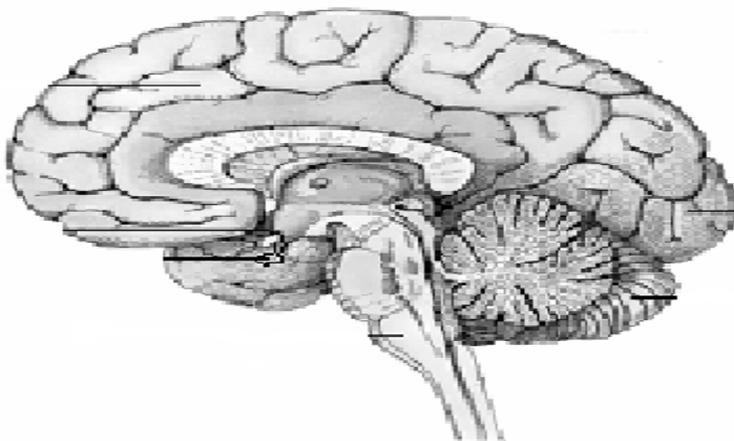
a) What are the role of the following in breathing :- [3]

- (i) Ribs
- (ii) Diaphragm
- (iii) Abdominal muscles.

### Question 6

a) Explain ANY of the THREE phases of menstrual cycle in your own words. The explanation should not exceed THREE sentences. [3]

b) The diagram given below is of a human brain. Study the same and answer the following questions.



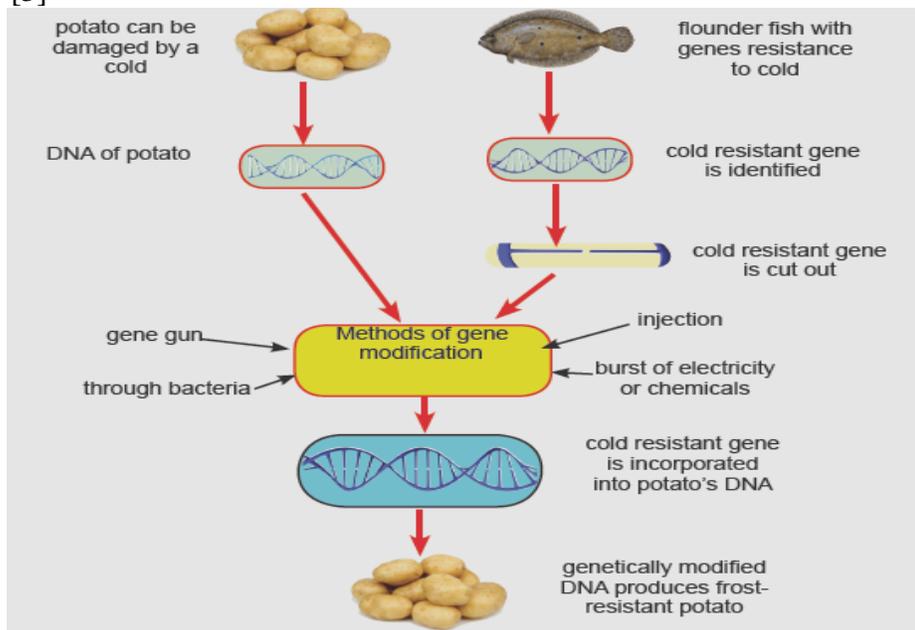
- (i) Label the following parts of the brain on the diagram in the question paper itself [3]  
( Cerebrum, Cerebellum, Medulla oblongata, Pons, Corpus callosum, Thalamus)
- (ii) Write ONE function of ANY of the two parts mentioned above. [1]

c) The table given below shows the substance abused and their effects on the human body and their health. Complete the table by using appropriate words/ phrases. You may write the answer in the answer sheet against the number given. [3]

Substance abused	Effects on the body
<b>Alcohol</b>	1
2	Increases the risk of cancer, emphysema, bronchial disorders and heart diseases.
<b>Marijuana</b>	3

**Question 7**

- a) Explain the mechanism of opening and closing of stomata based on the K<sup>+</sup>ion concentration theory. You can add illustrations to aid your explanation. [3]
- b) List down FOUR factors affecting transpiration and explain how they affect transpiration. [4]
- c) The diagram given below shows the process involved in the modification of an organism genetically. Study the diagram and write down the steps involved in genetic engineering. [3]



\*\*\*\*\*Good Luck\*\*\*\*\*