(Pages : 8) ME 427

Sl. No. 333234

SSLC MODEL EXAMINATION, FEBRUARY - 2025

BIOLOGY

(English)

Time : 1½ Hours Total Score : 40

Instructions :

- The first **15** minutes is cool-off time.
- You may use the time to read the questions and plan your answers.
- Answer only on the basis of instructions and questions given.
- Consider score and time while answering.

Answer any 5 questions from Q. No. 1 to 6. Each carries 1 score. Score 5x1=5

1. Which antigen and antibody are present in a person with A blood group ? 1

(a) A antigen, a antibody

(b) A antigen, b antibody

(c) B antigen, a antibody

(d) No antigen, b antibody

2. How does the deficiency of vitamin A affect the function of the given cell ? 1

3. Correct mistake if any in the underlined part of the given statements. 1

(a) The **chemical evolution theory** argues that life originated in some other planet in the universe and accidentally reached the earth.

(b) Organs that are similar in structure and perform different functions are called **homologous organs.**

(c) **Chimpanzees** are the closest living creatures to humans in terms of evolution.

P.T.O.

Score 1

4. Find the correct pair of the given statements with the words given in the box.

(i) Gene therapy	(ii) Gene mapping
(iii) DNA profiling	(iv) Genetic engineering

(A) The technology of testing the arrangement of nucleotides.

(B) The technology helped to identify the location of a gene in the DNA responsible for a particular trait.

(C) The technology of controlling traits of organisms by bringing about desirable changes in the genetic constitution of organisms.

(D) The technology in which the genes that are responsible for diseases are removed and normal functional genes are inserted in their place.

(a) (A)-(i), (B)-(ii), (C)-(iv), (D)-(iii)

(b) (A)-(ii), (B)-(iii), (C)-(i), (D)-(iv)

(c) (A)-(iv), (B)-(iii), (C)-(i), (D)-(ii)

(d) (A)-(iii), (B)-(ii), (C)-(iv), (D)-(i)

5. The normal level of a component in human blood is given. Analyse it and identify the component. 1

70 - 110 mg/100 ml

6. Complete the table indicating the genetic nature of second generation when the round-seeded (Rr) pea plant obtained in the first generation is self-pollinated. 1

Traits	Genetic nature
Round seeded Plants	……**(i)**……, Rr
Wrinkled seeded Plants	……**(ii)**……

Answer any 6 questions from Q. No. 7 to 13. Each carries 2 scores. **6x2=12**

7. Analyse the given symptoms and identify the disease and its prevention methods.

(a) Cells in the mucus membrane which are destroyed by the toxins produce an ash coloured thick coating in the throat. 1

(b) Obstruct the flow of lymph and cause swelling in the lymph ducts. 1

Score

8. Answer the following questions related to vaccines. 1

(a) Make suitable pairs using items given in the box as

Disease - Vaccine

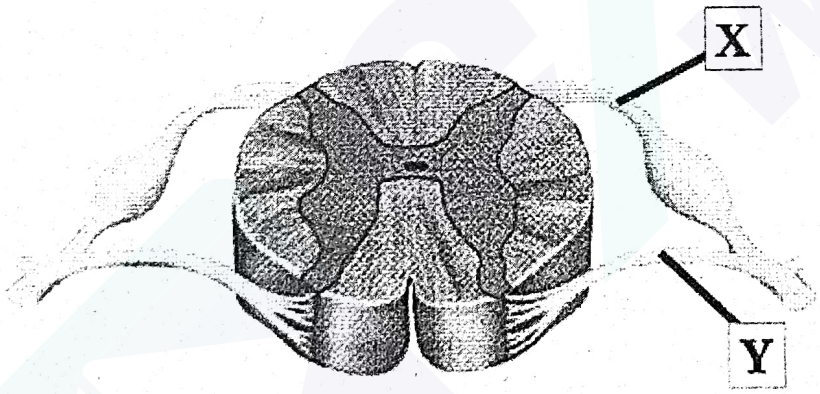
B.C.G, Polio, M.M.R, T.T, Tuberculosis, Mumps, Pentavalent

(b) How do vaccines provide immunity to the body ? 1

9. Microbes, plants and animals have close resemblances in their cell structure and physiology. Substantiate this statement using any two evidences from biochemistry and physiology. 2

10. *Draw a DNA nucleotide* using appropriate elements from those given. 2

11. Observe the illustration and answer the questions.



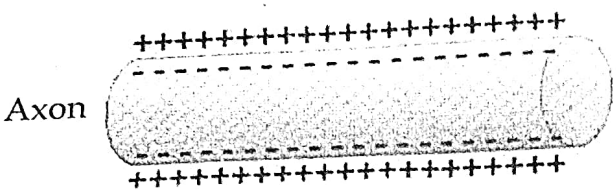
(a) Identify the parts indicated by **X** and **Y**. 1

(b) How do **X** and **Y** differ in their function ? 1

12. Explain the indicators given below to include in a presentation for a cancer awareness class.

- Cause of the disease 1
- Importance of early detection of the disease 1

13. Observe the illustration and answer the question.



How do the different charges on either side of the plasma membrane help in the generation and transmission of impulses ?

Answer any 5 questions from Q. No. 14 to 20. Each carries 3 scores. 5x3=15

14. Arrange columns **B** and **C** according to column **A**. 3

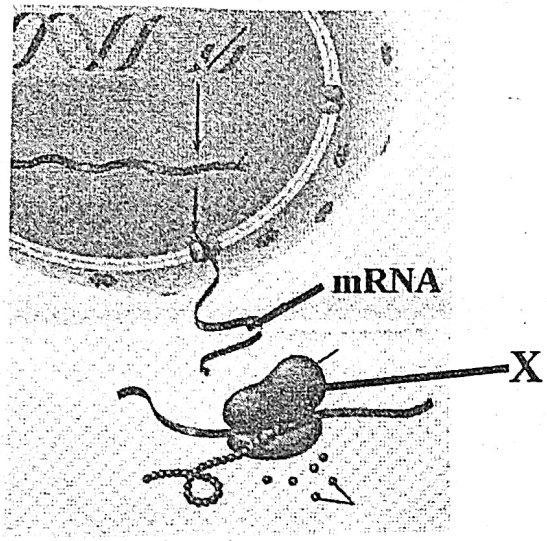
A - Disease	B - Causes	C - Symptoms
Alzheimer's	Destruction of specialised ganglions in the brain.	Frothy discharge from the mouth.
Epilepsy	Accumulation of an insoluble protein in the neural tissues of the brain.	Headache, fever, neck stiffness.
Parkinsons	Bacterial, viral, fungal infection.	Loss of memory.
	Continuous and irregular flow of electric charges in the brain.	Loss of body balance, shivering of the body.

15. Explain Darwin's theory of evolution based on the given indicators. 3

- Over production
- Natural selection
- Origin of new species

Score

16. Observe the illustration related to action of genes and answer the questions.



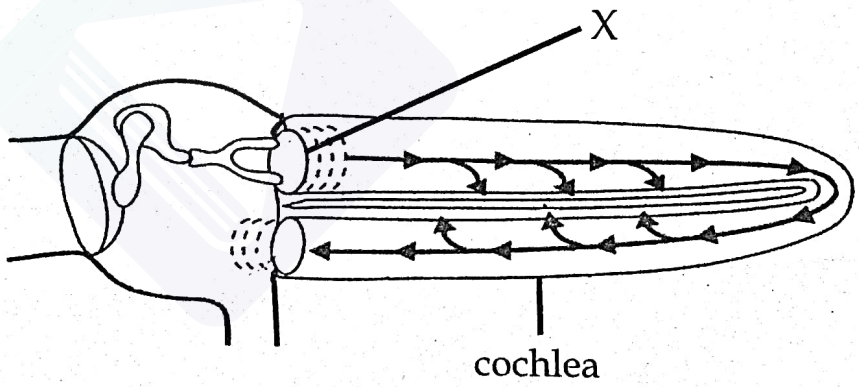
(a) What is the function that takes place in the organelle marked as **X** in this process ? 1

(b) What is the importance of the other two RNAs that participate in this process ? 2

17. Complete the given table suitably. 3

Disease	Hormonal Status	Symptom
Diabetes	(i)	(ii)
(iii)	excessive production of somatotropin after the growth phase	(iv)
Dwarfism	(v)	(vi)

18. Analyse the illustration and answer the questions.



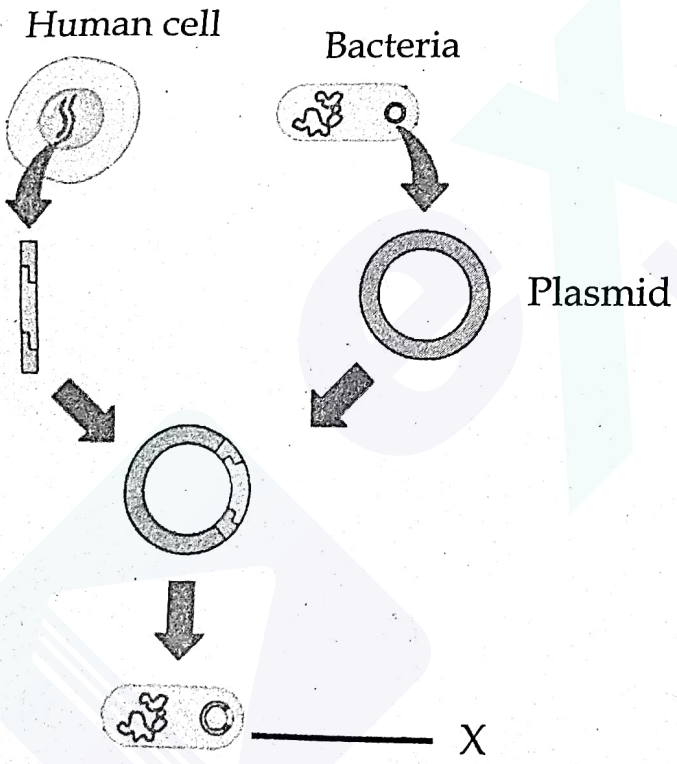
(a) Identify the part indicated as X. What is its function ? 1

(b) How do fluid movements in the cochlea make hearing possible ? 2

19. How does smoking adversely affect the following organ systems ?

- Nervous system — 1
- Respiratory system — 1
- Circulatory system — 1

20. Observe the illustration showing the production of insulin through genetic engineering and answer the questions.



(a) What is the change brought about in the genetic constitution of bacteria labelled as X ? 1

(b) Write the subsequent steps in the production of insulin. 2

Score
2x4=8

Answer any 2 questions from Q. No. 21 to 23. Each carries 4 scores.

21. Write appropriate reasons for the given statements.

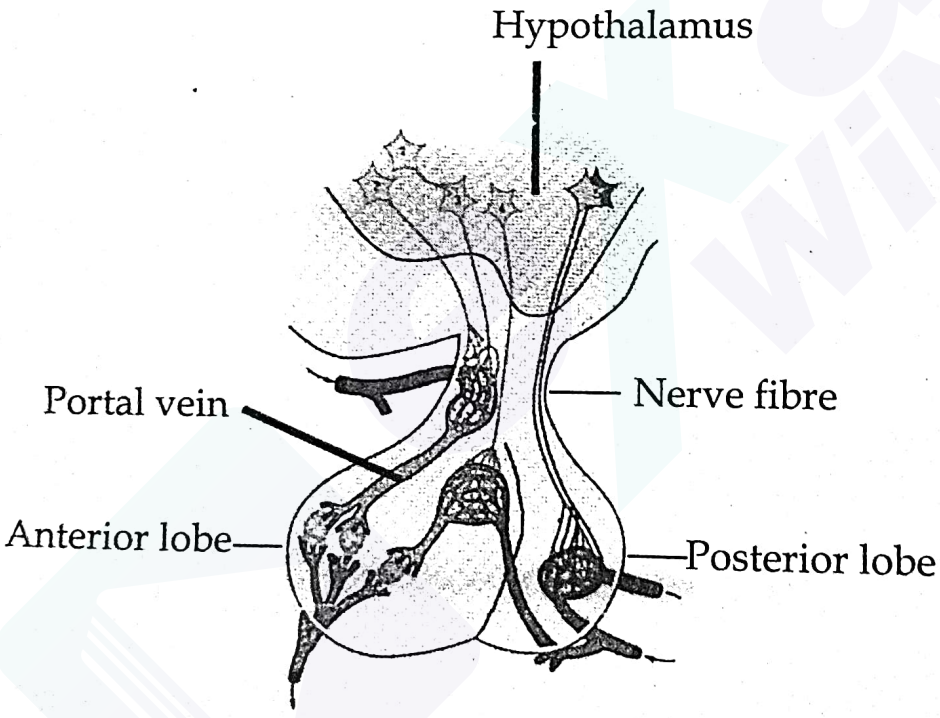
(a) Everyone cannot receive blood from all blood groups. 1

(b) Regular use of antibiotics reduces the quantity of some vitamins in the body. 1

(c) Like the blood itself, lymph has a prominent role in defense mechanisms. 1

(d) The inflammatory response is a defense mechanism. 1

22. Observe the illustration and answer the questions.



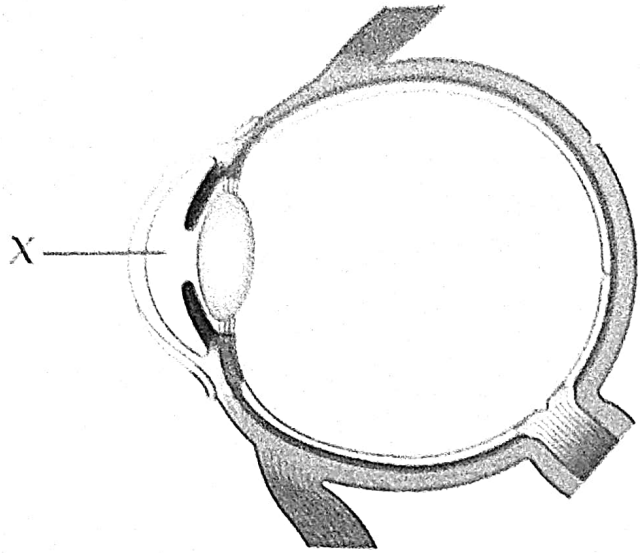
(a) What is the relationship between special neuro secretory cells in the hypothalamus and the pituitary gland ? 1

(b) What is the importance of the portal vein ? 1

(c) Explain how the hypothalamus functions as the prime controller of the endocrine system. 2

Score

23. Redraw the diagram, identify and label the parts with their names.



(a) The part that alter the curvature of lens. 1

(b) Transmits impulses from photoreceptors to the brain. 1

(c) Name the liquid found in the chamber marked as X . What is its peculiarity ? 1

Redraw the diagram 1

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