

231/2

**BIOLOGY**  
(Theory)

Paper 2

Mar. 2022 – 2 hours



949

Name ..... Index Number .....

Candidate's Signature ..... Date .....

**Instructions to candidates**

- (a) Write your name and index number in the spaces provided above.
- (b) Sign and write the date of examination in the spaces provided above.
- (c) This paper consists of **two** sections; **A** and **B**.
- (d) Answer **all** the questions in section **A** in the spaces provided.
- (e) In section **B** answer question **6 (compulsory)** and either question **7** or **8** in the spaces provided after question **8**.
- (f) **This paper consists of 12 printed pages.**
- (g) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**
- (h) **Candidates should answer the questions in English.**

**For Examiner's Use Only**

Section	Question	Maximum Score	Candidate's Score
<b>A</b>	<b>1</b>	<b>8</b>	
	<b>2</b>	<b>8</b>	
	<b>3</b>	<b>8</b>	
	<b>4</b>	<b>8</b>	
	<b>5</b>	<b>8</b>	
	<b>6</b>	<b>20</b>	
<b>B</b>	<b>7</b>	<b>20</b>	
	<b>8</b>	<b>20</b>	
<b>Total Score</b>		<b>80</b>	

PDF Compressor Free Version

0284



910110



## SECTION A (40 marks)

*Answer **all** questions in this section in the spaces provided.*

1. The photograph below shows an organism from a certain Class of organisms.



- (a) (i) Name the Class to which the organism belongs. (1 mark)

.....

- (ii) Using observable features from the photograph, state **two** reasons for your answer in 1(a)(i). (2 marks)

.....

- (iii) State **two** ways in which the organism is important to the environment. (2 marks)

.....

- (b) (i) Name the Kingdom to which bacteria belong. (1 mark)

.....

- (ii) Name **two** bacterial diseases in human beings. (2 marks)

.....

PDF Compressor Free Version

1. (a) State two adaptations of the frog's skin to gaseous exchange. (2 marks)

.....

.....

.....

- (b) Explain how the human nasal cavity is adapted to gaseous exchange. (3 marks)

.....

.....

.....

.....

- (c) Explain why the amoeba does **not** require an elaborate gaseous exchange system. (2 marks)

.....

.....

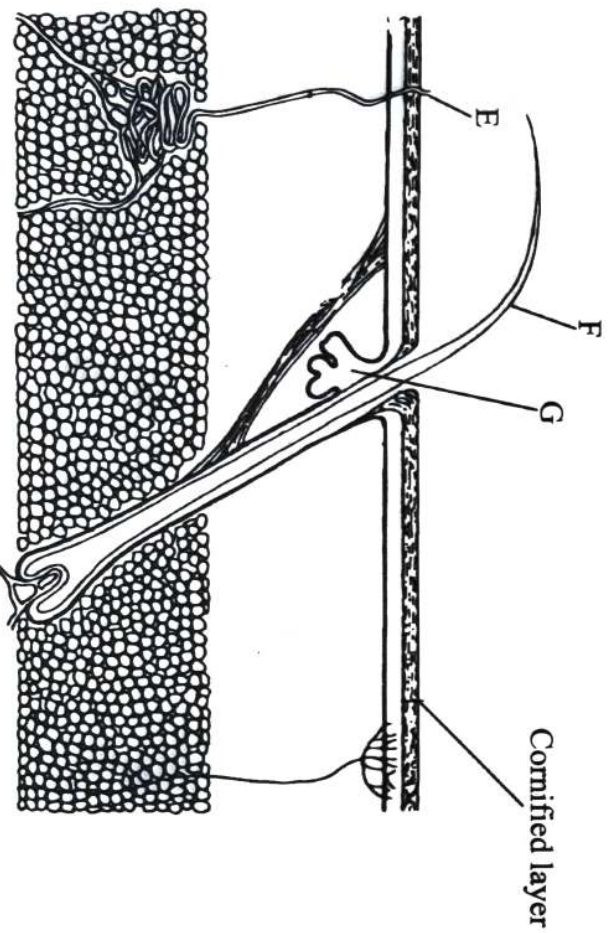
.....

- (d) Name the respiratory disease caused by *Bordetella pertussis*. (1 mark)

.....

3. The diagram below shows a section through the mammalian skin.

PDF Compressor Free Version





(a) (i) Name the substance produced by the part labelled G. (1 mark)

.....

(ii) State **two** functions of the substance named in 3(a)(i). (2 marks)

.....

.....

(b) Name the part labelled E. (1 mark)

.....

(c) Explain the function of the part labelled F to the mammal. (2 marks)

.....

.....

(c) (i) Name **one** part of the human body where the cornified layer is thickest. (1 mark)

.....

(ii) Give a reason for your answer in 3(c)(i). (1 mark)

.....

(a) Two dogs with black fur mated and produced an offspring with both black and brown fur. Given letter N represents the gene for black fur, determine the phenotypic ratio of the offspring. (5 marks)

.....

.....

.....

.....

.....

.....

.....



- (b) The photographs below show a hairy pinna in a human ear.



- (i) Explain why this trait is only found in males. (2 marks)

.....

.....

.....

.....

- (ii) Name **one** other trait that only appears in males. (1 mark)

.....

- (a) State the role of sunlight in the formation of strong bones. (1 mark)

.....

.....

- (b) The photograph below shows the dorsal view of a part of the mammalian vertebral column.



- (i) Name the part of the vertebral column shown. (1 mark)

.....

.....

(ii) Name the part labelled **H**.

(1 mark)

.....

.....

(iii) State **three** ways in which the vertebra shown is adapted to its functions.

(3 marks)

.....

.....

.....

.....

(c) Explain the significance of movement in plants.

(2 marks)

.....

.....





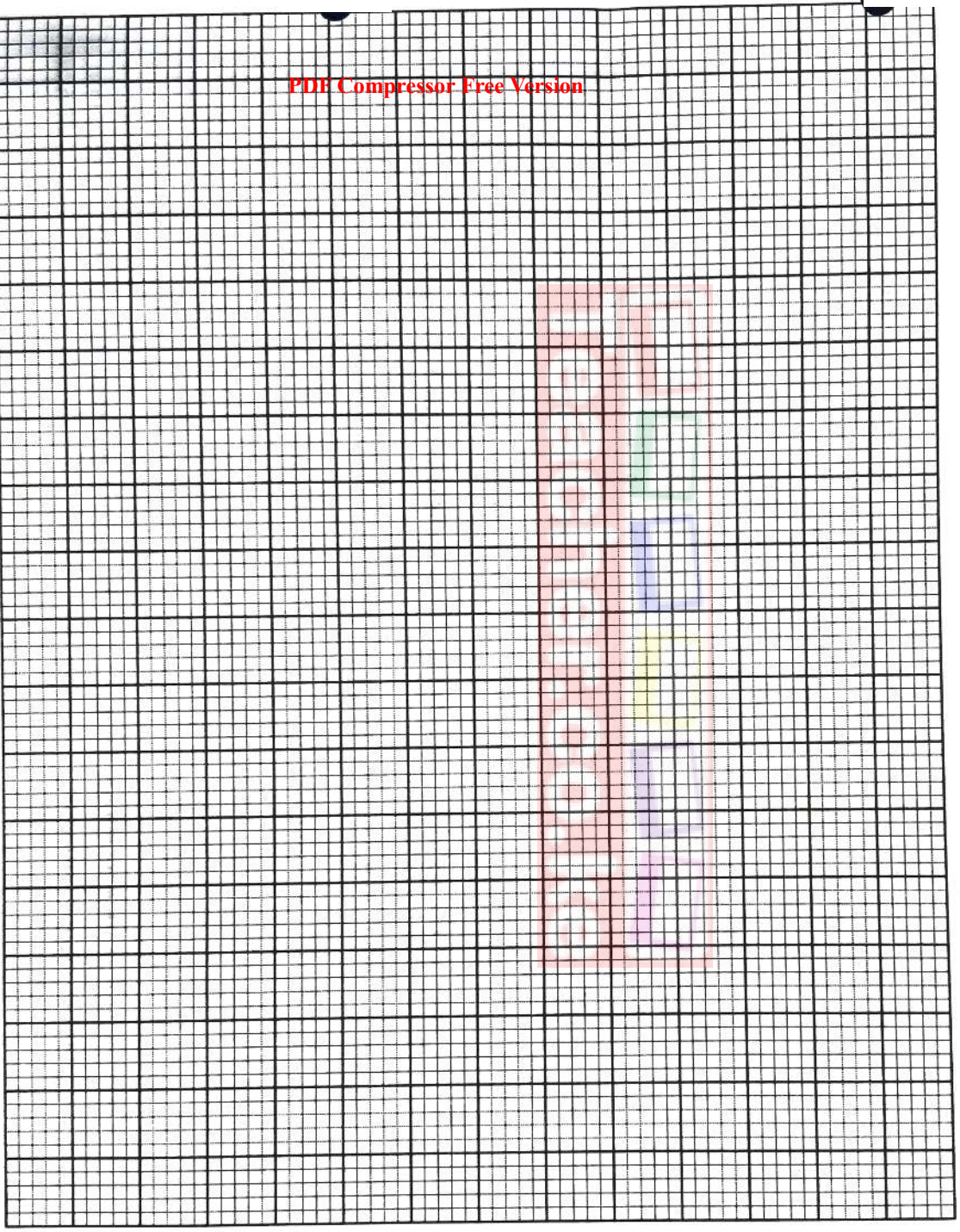
**SECTION B (40 marks)**

Answer question 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8.

6. The table below shows the varying concentration of two hormones, progesterone and luteinizing hormone, determined at seven-day intervals during the human menstrual cycle.

Time in days	1	7	14	21	28
Concentration of progesterone (mg/cm <sup>3</sup> of blood)	2	2	24	100	20
Concentration of luteinizing hormone (mg/cm <sup>3</sup> of blood)	46	40	100	84	40

- (a) On the same axis, draw graphs of concentration of hormones against time. (8 marks)



- (b) (i) Name the physiological process taking place when the concentration of luteinizing hormone is highest. (1 mark)

.....

- (ii) State the significance of the process named in 6 (b) (i). (1 mark)

.....

.....

- (c) (i) Determine the concentration of progesterone hormone at which the endometrium is thickest. (1 mark)

.....

.....

- (ii) Explain your answer in 6(c)(i). (1 mark)

.....

- (d) State **two** roles of progesterone hormone in humans. (2 marks)

.....

.....

- (e) Name **two** sites where progesterone hormone is produced in the human body. (2 marks)

.....

.....

.....

.....

- (f) Name another hormone, apart from the luteinizing hormone, that inhibits the secretion of progesterone hormone. (1 mark)

.....



- (g) (i) Predict the concentration of progesterone hormone seen days after the study period if fertilisation did **not** take place. (1 mark)

.....  
.....  
.....  
.....  
.....

- (ii) Give a reason for your answer in 6(g)(i). (1 mark)

.....  
.....  
.....

- (h) Name the part of the human body where the luteinizing hormone is produced. (1 mark)

.....  
.....

7. (a) Explain the role of the placenta during pregnancy. (10 marks)

- (b) Explain features and mechanisms that hinder self pollination and self fertilisation. (10 marks)

8. (a) Describe how the xylem tissue is structurally adapted to its functions. (5 marks)

- (b) Describe the functions of blood in the human body. (15 marks)

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

PDF Compressor Free Version

Teacher: \_\_\_\_\_







**THIS IS THE LAST PRINTED PAGE.**

Kenya Certificate of Secondary Education, 2021

231/2