

**FORM FOUR TERM ONE EXAM 2020**  
**BIOLOGY PAPER 1**  
(THEORY)

TIME: 2 HOURS

1. (a) Define the term 'parthenocarpy'. (1mk)

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- (b) Name **two** plant growth hormones that promote parthenocarpy. (2mks)

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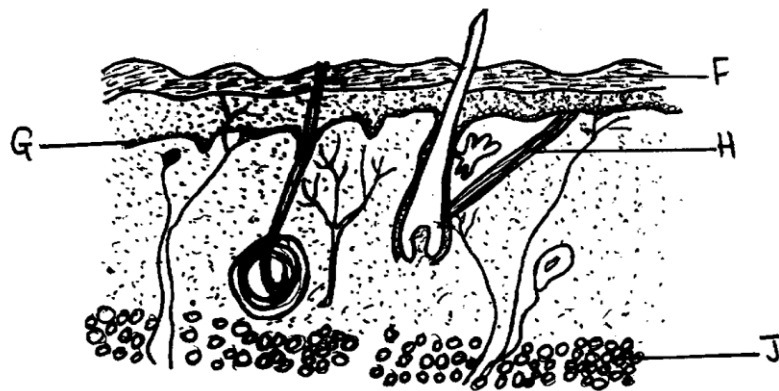
2. Name the organelle that performs each of the following functions in a cell (1mk)
- (i) Protein synthesis.

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(ii) Transport of cell secretions. (1mk)

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3. The diagram below shows a longitudinal section of mammalian skin.



- a) Name the parts labelled **F** and **G**. (2mrks)

**F** \_\_\_\_\_

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**G** \_\_\_\_\_

b) State **one** function of each of the parts labelled **H** and **J** (2mrks)

**H** \_\_\_\_\_

**J** \_\_\_\_\_

4. Other than carbon (IV) oxide, name other products of anaerobic respiration in plants (2mks)

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5. (a) Name the fluid that is produced by sebaceous glands. (1mk)

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(b) State **two** functions of sweat on the human body. (2mks)

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6. (a) State **two** characteristics that are used to divide the phylum arthropoda into classes. (2mks)

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(b) Name the class with the largest number of individuals in the phylum Arthropoda. (1mk)

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7. Why are people with blood group O referred to as universal donors? (1mk)

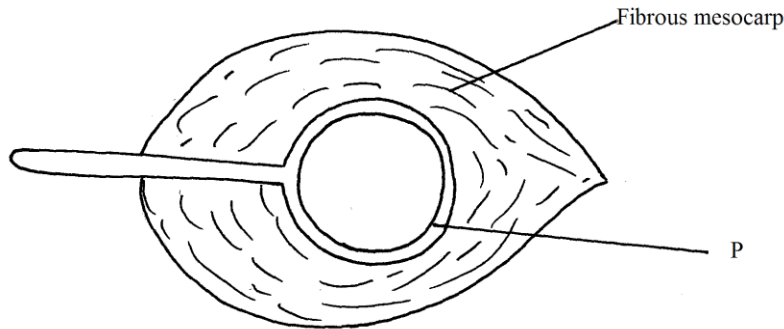
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8. The diagram below represents a longitudinal section of a fruit



(a) Name structures labeled P (1mk)

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(b) Describe two adaptations of the fruit for its mode of dispersal (3mks)

(i) Mode of dispersal

(ii) Adaptation

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9. (a) What causes the following diseases?

(i) Diabetes mellitus. (1mk)

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(ii) Diabetes insipidus. (1mk)

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b) An individual shows the symptoms for diabetes mellitus, how would you determine in the school laboratory whether they are positive for the condition?(3mks)

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10. In an attempt to estimate the number of weaver birds in a small woodland 435 were captured , marked and released. Three days later, 620 were captured 75 of which were marked.

a) What is the name of the sampling method described above? (1mk)

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b) Calculate the approximate size of the weaver bird population in the woodland.(2mks)

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c) Give one disadvantage of this method. (1mk)

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11. Identify the nucleic acid whose base sequence is shown below.

G-A-C-U-A-G-A-C-G

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i) Identify the type of nucleic shown above (1mk)

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ii) Give reason for your answer in (i) above. (1mk)

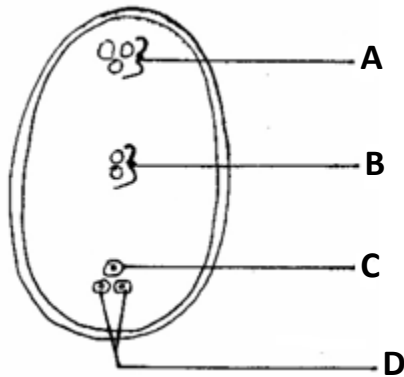
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iii) Write the base sequence of a DNA strand for the nucleic acid shown above(1mk)

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12. The diagram **below** shows a mature embryo sac of a flowering plant.



(a) Name the parts labeled **A** and **B** (2mks)

**A** \_\_\_\_\_

**B** \_\_\_\_\_

(b) What is the function of the structure labeled **B**? (1mk)

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13. (a) Name the tissues that transport water in plants. (1mk)

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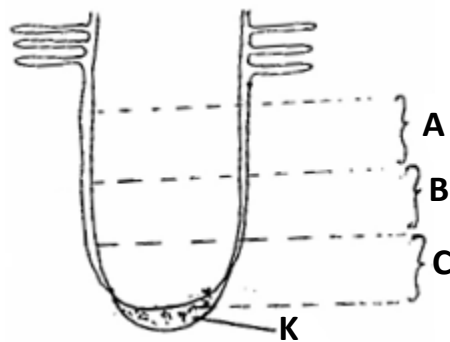
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(b) State why the tissue above is said to be dead. (1mk)

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14. The diagram **below** shows regions of growth in a root. Study it and answer the questions that follow.



(a) Name the zone labeled **B**

(1mk)

(b) State the function of part **K**

(1mk)

(c) State three characteristics of the cells found in zone **C**(3 mks)

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15. The enzymes pepsin and trypsin are secreted in their inactive forms. Explain why they are secreted in these inactive forms. (1mk)

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16. (a) Give two examples of natural selection in action. (2mk)

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b) List three features that make man the most dominant species on earth. (3mks)

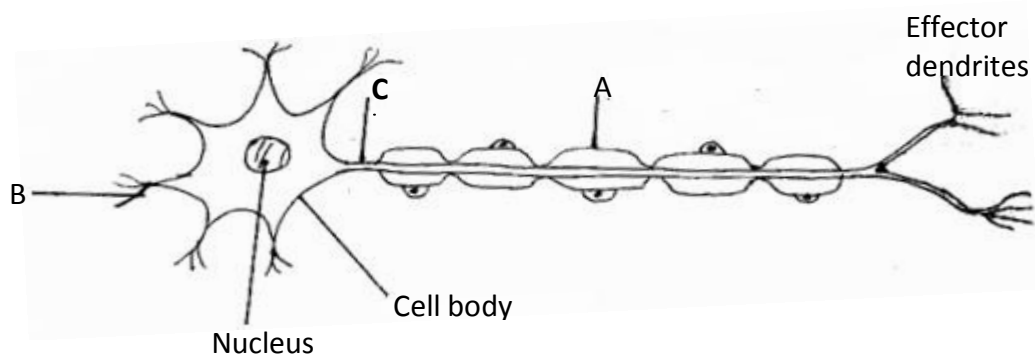
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17. Study the diagram **below** of a neurone in human being.



(a) Identify the neurone. (1mk)

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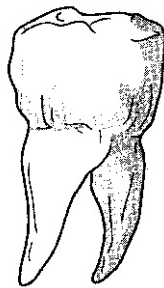
(b) Name the parts labeled.

**A** \_\_\_\_\_ (1mk)

**B** \_\_\_\_\_ (1mk)

(c) Using an arrow indicate the direction of movement of a nerve impulse along the neuron (1mk)

18. Study the diagram of the mammalian tooth **below** and answer the questions that follow.



(a) Identify the tooth. (1mk)

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(b) Give a reason for your answer in (a) above. (1mk)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(c) State **one** adaptation of the tooth to its function. (1mk)

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19.a) Name the part of the brain that regulates breathing (1mk)



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b) Give two ways through which the body responds to increased concentration of carbon (IV) oxide in the blood (2mks)

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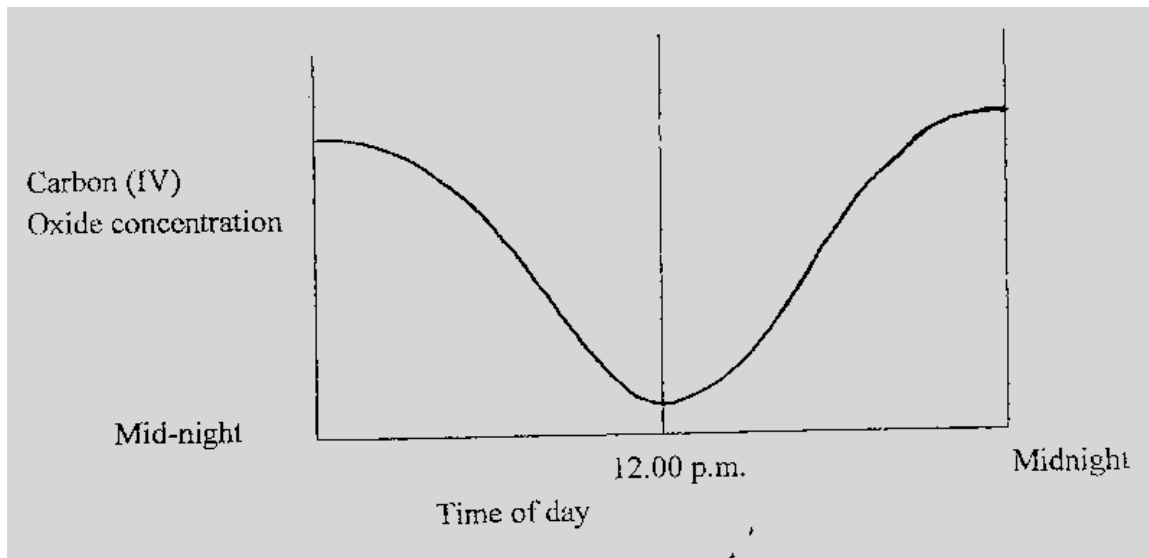
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c) Name the structures in pneumatophores through which gaseous exchange occurs. (1mk)

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20. The concentration of carbon (IV) oxide in a tropical forest was measured during the course of 24 hours period from mid-night to mid-night.



Account for the results obtained at midday. (2mks)

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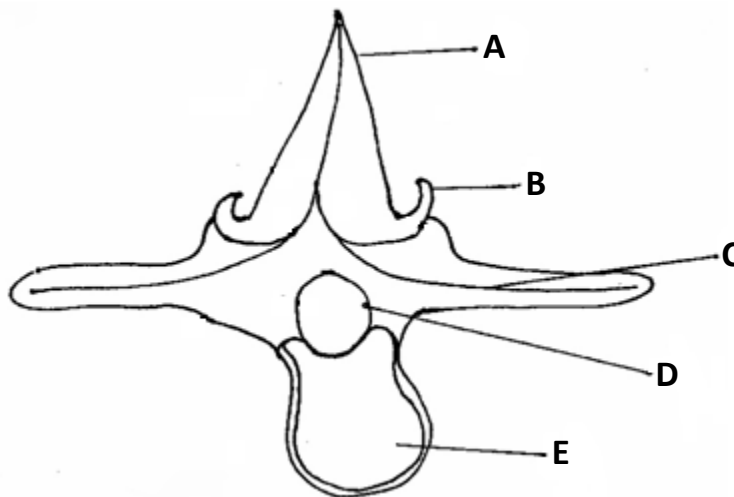
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21. The diagram **below** represents the anterior view of a certain vertebra.



(a) With a reason, identify the type of vertebra shown **above**. (2mks)

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(b) Name the parts labeled.

(i) **A** \_\_\_\_\_ (1mk)

(ii) **D** \_\_\_\_\_ (1mk)

(c) State the function of part **E**. (1mk)

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22.(a) State one similarity between diffusion and osmosis (1mk)

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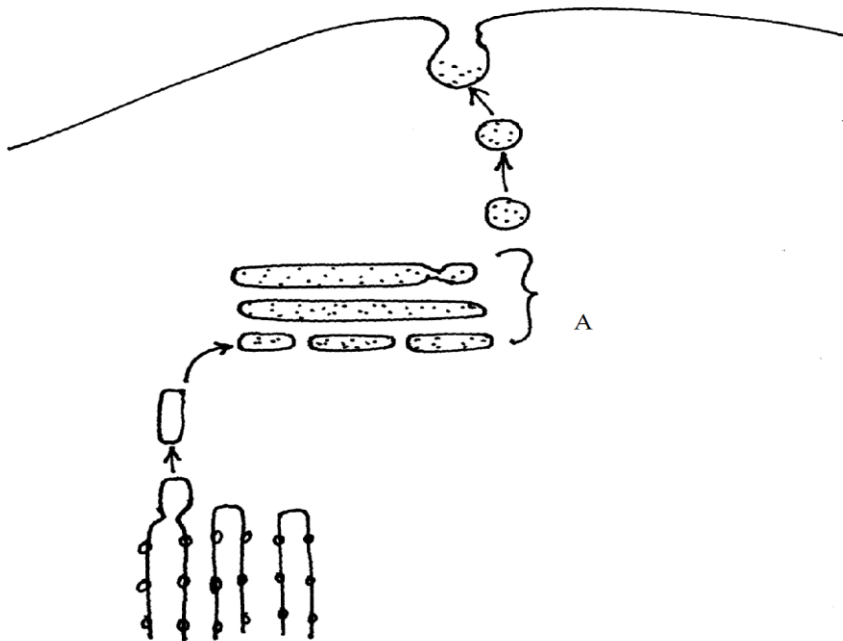
(b) State two factors that can reduce the rate of active transport (2mks)

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23. Study the diagram below and use it to answer the questions.



a) Identify the organelle marked A. (1mk)

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b) Give three functions of the organelle named in (a) above (3mks)

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24. It was found that during germination of pea seeds  $9.3\text{cm}^3$  of carbon (iv) oxide was produced while  $9.1\text{cm}^3$  of oxygen was used up.

a) Calculate the respiratory quotient (RQ) of the reaction taking place.(2mks)

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b) Identify the type of food substance being metabolized. (1mk)

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25. What is the biological importance of the larval stage during metamorphosis(2mks)

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