

NAME.....INDEX.NO.....

SIGNATURE.....

DATE.....

231/1 BIOLOGY

THEORY PAPER 1

TERM 3 2019

TIME: 2 HOURS

Instructions to candidates

1. Answer all questions in this paper in the spaces provided after each question
2. This paper consists of 11 printed pages. candidates should check the question paper to ensure all pages are printed as indicated and that no questions are missing.
3. Candidates should answer the questions in English.

1. (a) Name two branches of Biology that an oncologist needs to study in detail. (2 marks)

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(b) Form one students going for an excursion on the sea shore are required to collect specimen for learning biology. Name one apparatus and a specimen it can be used to collect. (1 mark)

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2. (a) Distinguish between codominance and incomplete dominance. (1 mark)

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(b) State one major difference between the mitotic telophase of animal cells and that of plant cells. (1 mark)

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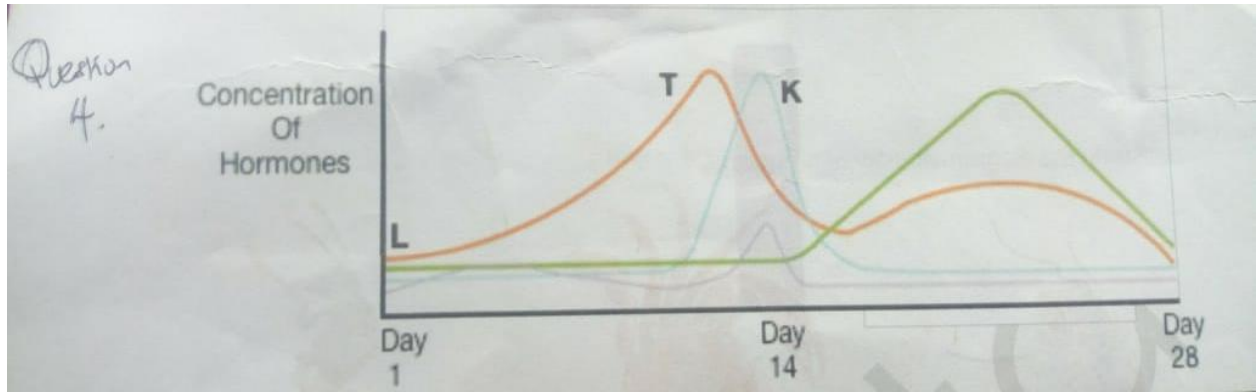
3. (a) Briefly explain the biological significance of pruning in tea plants and other plants used in making live fences (3 marks)

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(b) State any two roles of the cork cells formed during secondary thickening in the dicotyledonous plants (2 marks)

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4. Below is a graphical representation of the concentration of hormones involved in the menstrual cycle against time. Study it and answer the questions that follow



(a) Name hormone K. (1 mark)

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(b) Did pregnancy occur based on the cycle above? Explain your answer. (2 marks)

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(c) Name the organ that secretes hormone T (1 mark)

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(d) Identify the process that occurs during the time labeled L (1 mark)

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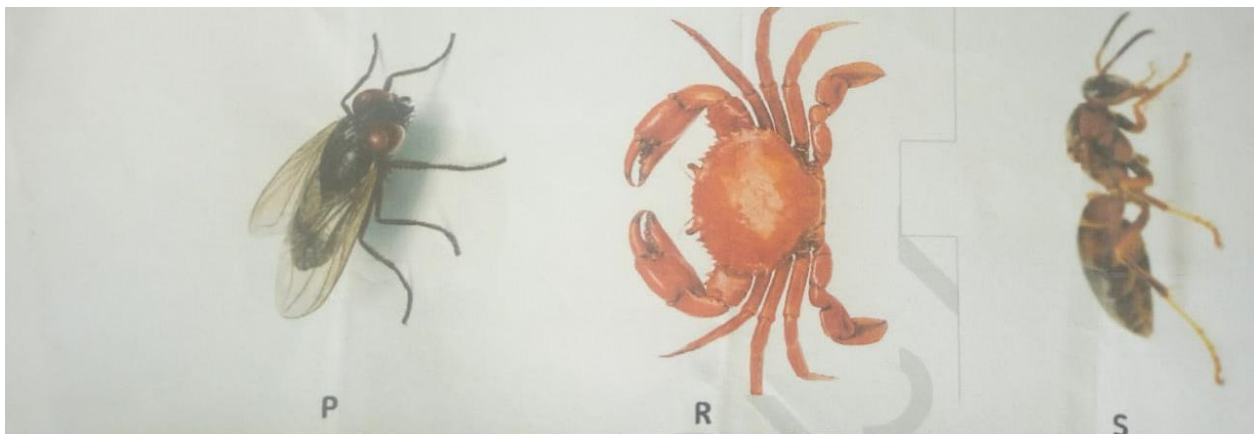
5. Small birds like the European robin puff up (swell up) their feathers during winter Explain the significance of this behavioral response. (3 marks)

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6. (a) An organism has a pair of short antennae and two body parts, head and trunk. State any two other characteristics that the organism is likely to have. (2 marks)

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(b) Study the diagrams below of organisms P, R and S.



Construct a dichotomous key that would be used to identify them. (2 marks)

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7. State one function of each of the following tissues. (2 marks)

Skeletal muscles

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Sclerenchyma tissue

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8. (a) What is cell specialization? (1 mark)

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(b) State two adaptations of a neuron to its function. (2 marks)

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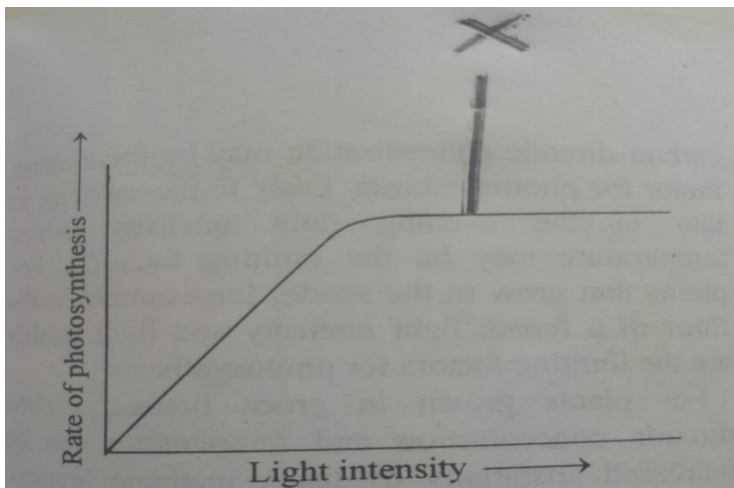
9. During a microscopy class a student was unable to see the field of view. State two possible adjustments she needed to make to ensure that the field of view becomes visible (2 marks)

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10. Animals have complex excretory organs as compared to the plants. Explain. (2 marks)

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11. Study the graph below and answer the questions that follow



(a) Why does the rate of photosynthesis become constant at the point labeled X? (2 marks)

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(b) State two other factors that affect the rate of photosynthesis (2 marks)

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12. (a) What is osmotic potential? (1 mark)

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(b) Change in soil pH can affect the rate of which plants absorb mineral salts.

Explain. (3 marks)

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13. (a) A pyramid of biomass shows reducing energy at each successive trophic level. Give a reason for this observation. (1 mark)

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(b) Control of mosquitoes by spraying oil onto stagnant water is effective. Explain why this method is however disadvantageous. (2 marks)

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14. (a) What is the role of temperature in a terrestrial ecosystem? (2 marks)

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(b) State two limitations of using the capture recapture method to establish population density. (2 marks)

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15. Name the apparatus used to measure the following abiotic factors. (2 marks)

Penetration of light in water

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Light intensity

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16. (a) Name a blood vessel that has capillaries on both ends. (1 mark)

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(b) Briefly explain how bee stings can cause death. (3 marks)

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17. A lion is an exclusive carnivore. State 2 dental adaptations it has to its mode of feeding. (2 marks)

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18. During a class experiment green grams' plants were germinated in two trays containing soil. Tray A contained soil that had been mixed with nitrogenous fertilizer while in tray B the fertilizer had not been added. One week after germination the seedlings were uprooted, their roots washed and their root nodules counted. (a) What was the aim of the above experiment? (1 mark)

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(b) Account for the observation made when the root nodules of the two sets of plants were counted. (2 marks)

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19. Briefly explain how budding occurs in yeast. (3 marks)

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20. (a) Distinguish between apocarpous and syncarpous flowers. (1 mark)

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(b) Complete the table below (2 marks)

Fruit	Type of fruit	Agent of dispersal
Black jack		
Coconut		

21. Moulting is shedding of the exoskeleton of arthropods such as houseflies to allow for growth. (a) Name the hormone that leads to the formation of the larval cuticle. (1 mark)

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(b) Sketch the life cycle of the housefly. (2 marks)

22. (a) State an example of structures in animals whose development demonstrates adaptive radiation. (1 mark)

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(b) Treatment of malaria is still a challenge in the world despite the invention of many antimalarial drugs. Explain. (3 marks)

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23. Name two parts in the kidney nephron where re-absorption of water takes place. (2 marks)

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24. (a) Name the product of glycolysis. (1 mark)

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(b) What is the role of the cristae in a mitochondrion? (1 mark)

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(c) Which is the most common substrate of respiration in human beings? Give a reason for your answer. (2 marks)

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25. In the study of distribution of organisms over the world members of the 'cat family' are found in different continents. leopards and cheetahs inhabit Africa, jaguars and panthers North America while tigers are found in Asia. Explain the biological phenomenon that could have led to this distribution. (3 marks)

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26. Name one disorder in humans caused by chromosomal non- disjunction. (1 mark)

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