



Our country, our future

NAME:..... STREAM.....

SENIOR SIX

P530/1

BIOLOGY

PAPER 1

EXAM 8

FOR CONSULTATION CALL 0776802709

INSTRUCTIONS TO CANDIDATES:

- *Answer all questions in both sections A and B*
- *Answers to Section A questions must be written in the boxes provided*
- *Answers to Section B should be written in spaces provided.*
- *No additional sheets of paper should be inserted in this booklet.*

FOR EXAMINERS USE ONLY

Section	Marks
A (1 – 40)	
B 41	
42	
43	
44	
45	
46	
Total	

1. Which one of the following is not a major source of genetic variation within a gene pool?
 A: crossing over B: independent assortment
 C: non- random breeding D: mutation

2. In prokaryotes, respiration occurs in structures called:
 A: gogi bodies B: mesosomes
 C: chloroplasts D: mitochondria

3. Which of the following is a micronutrient element?
 A: iodine B: iron C: sodium D: calcium

4. Brunner's glands are found only in the
 A: duodenum B: ileum
 C: small intestines D: mucosa of the stomach

5. Why is excessive use of pesticides dangerous?
 A: they persist in the soil to make it hard
 B: they cause eutrophication in water bodies
 C: they enter food chains and accumulate in other organisms to cause damage
 D: they enter food chains and accumulate in other organisms to cause damage

6. Which of the following is not a green house gas?
 A: chlorofluoro carbons B: carbondioxide
 C: oxygen D: methane

7. Which one of the following factors would not increase a population size?
 A: ability to resist disease B: high reproductive rate
 C: unstable abiotic conditions D: ability to avoid predation

8. Which one of the following factors are most important in the initial stages of the successions process?
 A: Abiotic factors B: biotic factors
 C: a habitat D: a community

9. A good example of a prokaryote is
 A: entamoeba B: plasmodium
 C: trypanosoma D: blue green algae

10. Which of the following vitamins is no water soluble?
 A: A B: E C: D D: C

11. In a living ccell the lysosome organelle contains a number of enzymes. What would be the effect on the cell of puncturing the organelle? The cell would undergo?
 A: plasmolysis B: autolysis C: crenation D: haemolysis

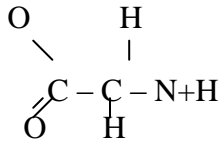
12. One important advantage of a light microscope over an electron microscope in biological studies is that:
 A: it is portable

- B: it can be used for examining living specimens
- C: its source of radiation is light while that of electron microscope is electrons
- D: it has a set of quartz or glass lenses while the electron microscope has electro magnets for its lenses

13. Cells with uniformly thickened and lignified walls are likely to be:
 A: sclerenchyma B: collenchyma C: parenchyma D: Phloem
14. In which one of the following is ciliated epithelium found?
 A: kidney B: small intestines
 C: lining of capillaries D: lining of alveoli
15. Which one of the following blood cells is likely to be attacked first by the AIDS virus?
 A: Erythrocytes B: Polymorphs
 C: lymphocytes D: thrombocytes
16. Which one of the following terms refers to the site of crossing over during meiosis?
 A: synapsis B: Diakinesis C: centromere D: Chiasma
17. Which of the following normally live on land but have aquatic larval stages?
 A: mosquito, praying mantis and snail
 B: snake, mosquito, toad
 C: mosquito, butterfly and toad
 D: mosquito, toad, dragon fly
18. Which of the following is not an adaptation for photosynthesis in a leaf? It
 A: is broad and thin
 B: has a thick cuticle
 C: has stomata and air spaces inside
 D: has numerous chloroplasts in the palisade cells
19. The organism that requires only inorganic raw materials from the environment is
 A: virus B: amoeba C: plasma D: Euglena
20. The existence of ringworm on human skin is an example of:
 A: parasitism B: mutualism
 C: commensalism D: symbiosis
21. The pressure which tends to force water out of a cell is called
 A: osmotic potential B: water potential
 C: pressure potential D: turgor pressure
22. Enzymes that catalyse the removal of water molecules from a substrate are known as
 A: reductases B: dehydrogenases
 C: dehydrases D: hydrases
23. The matrix in cartilage is secreted by
 A: fibroblasts B: chondroblasts C: Osteoblasts D: Osteodasts

24. For diffusion to occur,
 A: the diffusing particles should all be of uniform size
 B: the diffusion medium should be of uniform density
 C: there must be uniform distribution of the diffusing particles
 D: a free energy gradient must exist.
25. Chromatophores are
 A: reproductive cells
 B: fat containing cells
 C: carotenoid containing cells
 D: pigment containing cells in certain vertebrates
26. Which one of the following base triplets will pair with ACG triplet base?
 A: TGC B: AAT C: GTG D: ACC
27. The centromere is:
 A: a gene segment of the chromosome
 B: a structure for chromosomal separation
 C: the longitudinal half of a duplicate chromosome
 D: cross over point of a chromosome
28. If x picograms of DNA are contained in a cell whose nucleus has just mitotically divided, the amount of DNA in the next anaphase stage of mitosis would be
 A: $x/4$ B: $x/2$ C: $2x$ D: x
29. When a piece of liver is dropped into a beaker containing hydrogen peroxide, there is a vigorous reaction. This is due to the enzyme
 A: catalase B: pepsin C: trypsin D: carbonic anhydrase
30. Which of the following is the function of the golgi apparatus?
 A: synthesis of secretory substances B: protein synthesis
 C: sites for respiratory metabolism D: intracellular digestion
31. Insectivorous plants are most likely to be associated with
 A: acidic soils B: alkaline soils
 C: soils rich in ammonium compounds D: soils with low nitrate content
32. The reaction rate of salivary amylase with starch decreases as the concentration of chloride ions is reduced which of the following describes the role of the chloride ions?
 A: coenzymes B: cofactors
 C: competitive inhibitors D: allosteric inhibitors
33. An ecological niche is the
 A: abiotic component of an organism's environment
 B: habitat where an organism finds the most suitable climate
 C: place where an organism finds its food supply
 D: way an organism interacts with other organisms

34. The following structural formula is for an amino acid in solution



What substance was added, and what effect would this have on the final pH of the solution?

- A: salt added pH unchanged B: acid added pH lower
 C: Acid added, pH unchanged D: base added, pH higher

35. Mechanical tissues are very poorly developed in

- A: mesophytes B: hydrophytes C: Xerophytes D: lithophytes

36. Which of the following food materials has the highest amount of potential energy per unit weight?

- A: monosaccharides B: proteins C: vitamins D: fats.

37. Which of the following is the arrangement of microtubules in a cross section of a flagellum of eukaryotes

- A: 9 + 0 B: 9 + 1 C: 9 + 2 D: 9 + 4

38. In the lock and key hypothesis for the mechanism of enzyme action how does the inhibitor substance stop enzyme action? By

- A: raising activation energy B: distorting substrate molecules
 C: destroying the co-enzymes D: occupying active sites on the enzyme

39. The existence of different castes within termites is an instance of

- A: meranism B: polymorphism
 C: genetic drift D: natural selection

40. In an experiment to determine population of a species of animals using the capture – recapture method the following results were obtained;

Number of animals marked and release = 210

Number of captured in second collection = 240

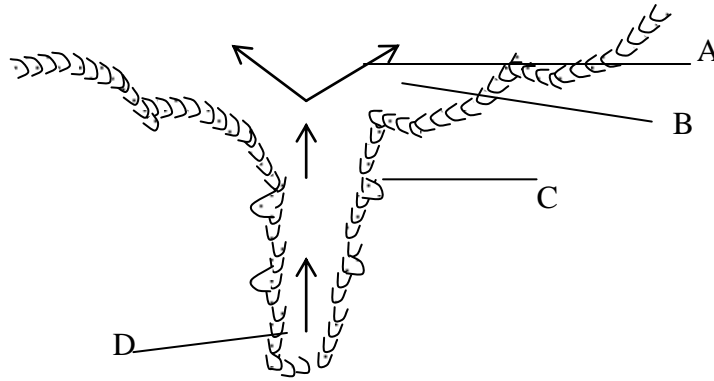
Number recaptured = 24

What was the estimated total population of the animals?

- A: 474 B: 1890 C: 2100 D: 1860

SECTION B: (60 MARKS)

41. The figure 1 below represents a gastric gland, found in the wall of the mammalian stomach



(a) (i) Identify the parts and the cells labelled A to D

- A
- B.....
- C.....
- D.....

(ii) Name the secretions produced by the cells B, C and D

- B.....
- C.....
- D.....

(iii) Briefly outline the functional roles of the substances or secretions named in (a) (ii) above

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(b) The human gut exhibits a potentially dangerous system capable of causing self destruction throughout digestion outline the various safe guards in the gut which prevent this from happening

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42. The primary productivity of four different ecosystems was determined. The table below shows the results

Ecosystem	Primary productivity $\text{Kj m}^{-2} \text{ yr}^{-1}$
Temperate forest	25,000
Tropical forest	39,000
Temperate grassland	14,000
Intensively cultivated temperate land	29,000

(a) Suggest four reasons that account for the higher primary productivity of a tropical forest compared to a temperate forest.

- (i)
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- (ii)
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- (iii)
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- (iv)
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(b) Explain the difference in primary productivity between an intensively cultivated land in a temperate region and a temperate grassland.

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(c) (i) Briefly describe how you would estimate the fresh biomass of producers in a one month old garden of growing maize

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(ii) Why should the productivity of an ecosystem be measured in terms of energy rather than biomass

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43. (a) What is genetic mutation?

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(b) Where and when do genetic mutations most frequently occur in nature?

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(c) What is the general name of agents which cause mutations? Give two examples of such agents

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(d) Name one common type of genetic mutation and the disease caused by this mutation

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(e) In what area of human activity are mutations being used for the benefit of mankind?

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44. (a) Explain Darwin's theory of natural selection

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(b) State three observations and two conclusion from which Darwin derived his theory

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(c) How does the modern view of evolution differ from Darwin's view?

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(d) In sugarcane, the genes for yellow midrib (y) and land internodes (n) are recessive to queen midrib (Y) and short internode (N), and are on the same chromosomes. A yellow sugarcane with long intermodes was crossed with a sugarcane helewzygous for yellow midrib and long internode. The off-springs were

256 YyNn 38Yynn
272 yynn, 34 yyNn

Calculate the cross over value (COV)

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45. (a) Explain the following

(i) competitive inhibition

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(ii) Non-competitive inhibition

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(b) In what ways do enzymes differ from catalysts?

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(c) Briefly describe the lock and key hypothesis of enzyme action

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46. (a) Why is it not true to refer to interphase as a resting stage?

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(b) Name two processes which ensure that each of the two daughter cells from mitosis remain diploid as the mother cell.

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(c) Give any two similarities and four differences between mitosis and meiosis

(i) similarities

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(ii) differences

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