



**FOUNTAIN OF HOPE HIGH SCHOOL BUKEEKA –  
KAYUNGA DISTRICT  
S.5 MID TERM III EXAMINATION 2022  
Biology PAPER 1 P530/1**

**TIME 2HRS: 30MINUTES**

**NAME:**..... **SIGN:**.....

**INSTRUCTIONS TO CANDIDATES:**

- Answer all questions in both sections A and B
- Answers to Section A questions must be circled on the correct alternative.
- 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	
<b>Total</b>	

**SECTION: A (40 MARKS)**

1. The relationship between cellulase – secreting bacteria and herbivorous mammals is an example of
  - A. Parasitism
  - B. Commensalism
  - C. Autotrophism
  - D. Mutualism
2. The transverse section of an unnamed plant was examined under a microscope and found to consist of an epidermis with poorly developed cuticle, a wide cortex with large intercellular air spaces. The unnamed plant is most likely a
  - A. Halophyte
  - B. Mesophyte
  - C. Xerophyte

D. Hydrophyte

3. Chloride ions are necessary for the proper functioning of salivary amylase enzyme chloride act as

- A. prosthetic
- B. activator
- C. co-factor
- D. co-enzyme

4. Self fertilization is prevented in ferns because

- A. Archegonia matures first, then antheridia
- B. antheridia matures first, then archegonia
- C. both archegonia and antheridia of the same species have incompatible gametes.
- D. The female reproductive organ is enclosed while the male one is not.

5. An enzyme which catalyses the conversion of a dipeptide into separate amino acids is an example of

- A. dehydrogenase
- B. hydrolase
- C. decarboxylase
- D. transferase

6. In which prophase stage are the chromosomes longer and thinner

- A. zygotene
- B. pachytene
- C. leptotene
- D. diplotene

7. When in Mitosis does spindle formation occur?

- A. anaphase
- B. interphase
- C. prophase
- D. metaphase

8. Which of the following groups exhibit radial symmetry?

- 1. Protozoa
- 2. Coelenterates
- 3. Annelids
- 4. Nematodes

- A. all of them
- B. 1, 2 and 3
- C. 1 and 4
- D. 2 only

9. A student of histology describes cells as prismatic with a height dimension being not greater than width, on the surface, they had a mosaic appearance. Which of these is it likely to be?

- A. squamous
- B. cuboidal
- C. transitional
- D. epithelial



10. The energy flow in the ecosystem is  
A. in two directions  
B. cyclic  
C. unidirectional  
D. multidirectional
11. Which one of the following describes the structure of an earth worm?  
A. diploblastic coelomate  
B. triploblastic coelomate  
C. diploblastic acoelomate  
D. triploblastic acoelomate
12. Which of the following best describes how pesticides become dangerous today.  
A. they harden the soil  
B. they cause eutrophication in water and kill the fish  
C. they persist in the soil and make it infertile  
D. they pass through food chains in more concentrated forms
13. During Meiosis, crossing over occurs between one of the following  
A. two homologous chromosomes  
B. two homologous chromatids  
C. two non – homologous chromatids  
D. two centromeres of homologous chromatids
14. The exchange of gases during respiration is due to  
A. exosmosis  
B. active transport  
C. endosmosis  
D. diffusion
15. Glycolysis takes place in  
A. mitochondria  
B. granae  
C. endoplasmic reticulum  
D. cytoplasm
16. The enzymes for electron transport chain are present in  
A. cytoplasm  
B. inner mitochondrial membrane  
C. matrix  
D. outer mitochondrial membrane
17. In an electron transport chain, one molecule of  $\text{NADH}_2$  yields  
A. 1 ATP  
B. 2 ATP  
C. 3 ATP  
D. 1  $\text{FADH}_2$
18. Which of the following materials has the highest amount of potential energy per unit weight  
A. monosaccharides

- B. proteins
- C. vitamins
- D. fats

19. Which of the following reversible changes occurs in both plants and animals?

- A. carbohydrates  $\longleftrightarrow$  fats
- B. Hexose sugars  $\longleftrightarrow$  starch
- C. proteins  $\longleftrightarrow$  carbohydrates and ammonium ions
- D. carbohydrates  $\longleftrightarrow$  carbondioxide and water vapour

20. Which of the following body organs would be lined with a ciliated pseudo stratified columnar epithelium

- A. nephrones
- B. ileum
- C. urinary bladder
- D. trachea

21. Which of the following is not a method of measuring the rate of respiration in an organism?

- A. estimating the amount of food taken in by an organism per day
- B. measuring the heat produced by the organism in a given day
- C. measuring the amount of carbondioixde produced by the organism in a given day
- D. estimating the amount of oxygen consumed by the body in a given time

22. Which of the following features is not essential for gaseous exchange in lungs?

- A. Pleural fluid
- B. dense net work of capillaries
- C. thin epithelium
- D. presence of moisture

23. Which one of the following glands is compound saccular?

- A. mammary glands
- B. sebaceous glands
- C. sweat glands
- D. gastric glands

24. Which of the following would be the immediate danger to a fish when taken out of water?.

- A. drying out of gills
- B. lack of oxygen around gills
- C. reduced surface area for gaseous exchange
- D. change in external temperature

25. Which of the following organelles is associated with the final stage of most cell secretions?

- A. smooth endoplasmic reticulum
- B. rough endoplasmic reticulum
- C. ribosome
- D. Golgi apparatus

26. Which of the following enzymes is adversely affected by high PH?

- A. trypsin
- B. pepsin
- C. amylase



D. lipase

27. Which of the following symptoms is most likely to be caused by magnesium deficiency in plants?

- A. yellow leaves and stunted growth
- B. poor root growth
- C. weak stems
- D. yellow spotted leaves

28. Which one of the following methods is used by halophytes to conserve water?

- A. shed leaves
- B. store water
- C. reduce number of stomata
- D. have small leaves

29. Which one of the following substances consists of globular proteins?

- A. enzymes
- B. keratin
- C. elastin
- D. collagen

30. Organism X has the following characteristics

- i) Body temperature =  $29^{\circ}\text{C}$
- ii) Number of limbs = 8
- iii) Head and thorax are fused
- iv) Feeds on dead animals
- v) is nocturnal

Which one of the following combinations of characteristics would be useful in making a dichotomous key?

- A. i), iv) and v)
- B. i) and v)
- C. ii) iii) and v)
- D. ii) and iii)

31. Plant roots in association with symbiotic bacteria is an indication that

- A. the plant is indication that
- B. the roots have been attached
- C. soil around roots lacks nitrogen
- D. soil around roots lacks humus

32. Which one of the following blood conditions would cause least ventilation rate in humans

- A. low carbondioxide and high oxygen concentrations
- B. high carbondioxide and oxygen concentrations
- C. lo carbondioxide and oxygen concentrations
- D. high carbondioxide and oxygen concentrations

33. Which of the following is likely to happen to a dog fish which ahs damaged branchial values.

- A. water would not enter the mouth
- B. water would enter through the gill slits.
- C. water would get out through the mouth
- D. water would not enter the spiracles

34. In which one of the following parts of the cell does most production of ATP occur

- A. matrix of mitochondria
- B, cristae of mitochondria

- C. cytoplasm of cell
- D. outer membrane mitochondria

35. Which of the following describes the green house effect.

- A. depletion of the ozone layer increases atmospheric pollution
- B. the earth retains the heat it gains from the sun
- C. increasing atmospheric carbondioxide prevents heat loss from the earth surface
- D. the earth gives out carbondioxide which prevents light rays from the sun reaching the earth.

36. The reproductive stage of plasmodium in the liver is represented by the

- A. zygote
- B. gametocyte
- C. merozoite
- D. sporozoite

37. Which of the following are formed during anaerobic respiration in yeast cell.

- A. lactic acid and ATP
- B. lactic acid and ADP
- C. ethanol and ATP
- D. ethanol and ADP

38. Which of the following would not reduce the development of Graafian follicles in mammalian ovaries?

- A. high levels of oestrogen
- B. high levels of progesterone
- C. deficiency in the pituitary gland
- D. low levels of the luteinising hormone

39. Which one of the following is an intracellular parasite?

- A. trypanosome
- B. plasmodium
- C. schistosome
- D. hook worm

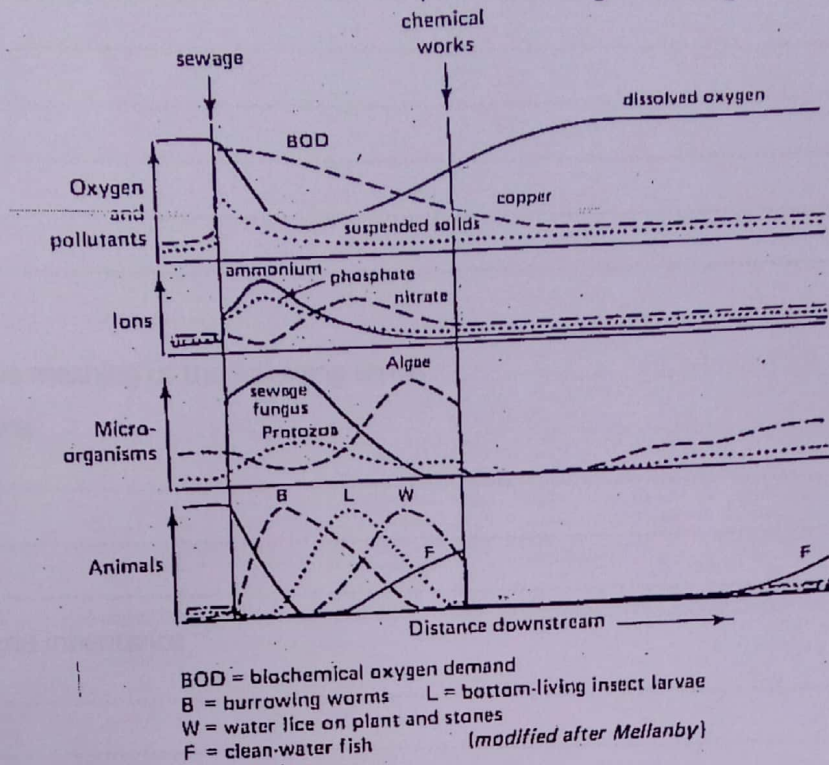
40. In which of the following situations would population growth occur? When the number of

- A. birth equals the number of death
- B. birth plus the number of immigrations
- C. birth plus the number of immigrations is greater than the number of death plus the number of emigrations
- D. death plus the number of emigrations is greater than the number of birth plus the number of immigration.



### SECTION: B (60MARKS)

41. The graph below shows the effect of sewage discharge on some chemical constituents of a river at increasing distances x down stream from the point of sewage discharge.



a) Give explanation for the variation in concentration of ammonium ions and dissolved oxygen, down stream from the point of sewage discharge

i) Ammonium ions

(03marks)

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ii) Dissolved oxygen

(03marks)

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b) Describe the effects of the sewage on the ecosystem at distance X down stream. (04marks)

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42.a) Give the meaning of the following terms

i) Epistasis

(01mark)

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ii) Dihybrid inheritance

(01mark)

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(b) In oats, the grain is enclosed by a hull (remains of the flower). The colour of the hull is controlled by two pairs of alleles which interact. In a cross between two pure breeding varieties of oats, one with black hulled grains the other with white hulled grains, the offspring (F1) all had black hulled grains. Allowing F1 to self-fertilize gave F2 with the phenotypes below

Black hulled grain	418
Grey hulled grains	106
White hulled grains	36

i) What genetic ratio is suggested from the figures given

(01mark)

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ii) Use suitable genetic symbols to work out the genotypes and phenotypes of each generation.

(07marks)

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43. a) State two properties of a nervous impulse.

(01mark)

b) Describe the ionic movements in the axon membrane during the following stages.

(i) Polarization

(02marks)

(ii) Depolarization

(03marks)

(iii) Repolarization

(02marks)

c) Outline **two** factors that affect the speed of impulse transmission.

(02marks)

44. a) Distinguish with examples between facultative parasites and obligate parasites. (02marks)

b) Using a named example, describe how a parasitic mode of nutrition is

(02marks)

(i) Similar

(ii) Dissimilar to carnivorous mode of nutrition

(02marks)

c) How does the nutrition of *Rhizopus* differ from that of the tape worm?

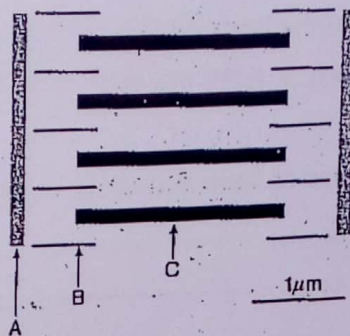
(02marks)

d) How does a herbivore obtain sufficient protein in its diet?

(03marks)



45. a) The figure below represents part of a skeletal muscle fibril

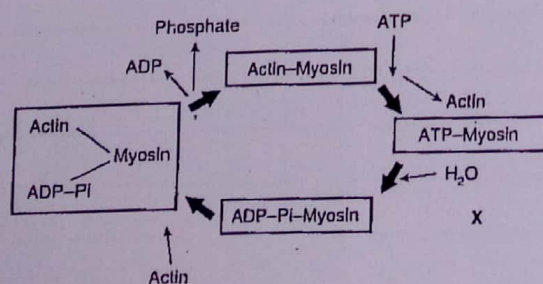


(i) What term is used to describe the complete structure shown above? (01mark)

(ii) Identify the parts labeled A, B and C. (1.5marks)

(iii) State what happens to parts labeled above when the muscles fully contracts. (1.5marks)

b) The following diagram represents the cycle of the proteins actin and myosin in a muscle cell as it contracts and relaxes (Pi represents phosphate)



(i) Myosin can be described as an **ATPase**. What is an **ATPase** and what does it do? (02marks)

(ii) State the type of reaction occurring at X in the diagram above. (01mark)

(iii) When an organism dies, the muscles soon become contracted, a condition called rigor mortis. Indicate on the diagram using the letter Y, the point where rigor mortis probably occurs. (01marks)

(iv) Outline the ways in which calcium is used to activate muscle contraction. (02marks)

46. a) Describe the structure of the prothallus (gametophyte) in the life cycle of a fern. (04marks)

b) Give two reasons why the fern cannot survive entirely on land in its life cycle. (02marks)

(c) State four adaptations of lichens as pioneer community in ecological succession. (04marks)

END