

NAME: RANDOM NO.

CANDIDATE NO.

UCE MOCK

BIOLOGY

THEORY

553/1

2 ½ HOURS

**UGANDA CERTIFICATE OF EDUCATION
MOCK EXAMINATION
BIOLOGY PAPER 1
(THEORY)
553/1**

TIME: 2 HOURS 30 MINUTES

INSTRUCTIONS

- *Answer all questions in section A and B*
- *Write the answers to section A in the boxes in the margin of each question*
- *Write answers to section B in the spaces provided*
- *Answer only two questions from section C*
- *Write the answers to section C on the answer sheets provided.*

FOR EXAMINERS USE ONLY

SECTION	MARKS
A	
B 31	
B 32	
B 33	
C	
C	
TOTAL	

1. The commonest pioneer species during ecological succession are
 - A. Lichens
 - B. Mosses
 - C. Ferns
 - D. Forests

2. One major characteristic feature present in mesophyll cells but lacking in other plant cells is
 - A. Sap vacuole
 - B. Chloroplasts
 - C. Mitochondria
 - D. Cell walls

3. One major disadvantage of an exoskeleton is that it is
 - A. Impermeable to water
 - B. Impermeable to oxygen
 - C. Rigid, hindering movement
 - D. Rigid, hindering growth

4. When amoeba is placed in a hypertonic solution, formation of contractile vacuoles occurs at a
 - A. High rate in order to eliminate excess water
 - B. High rate in order to eliminate excess salts
 - C. Slow rate because there is little water
 - D. Slow rate because there is little salt

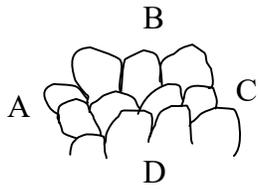
5. The tape-like structure of a tapeworm is for increasing
 - A. Camouflage
 - B. Rate of reproduction
 - C. Diffusion rate
 - D. Protection from the hosts enzymes

6. Brightly coloured large petals in flowers increases the following chances except
 - A. Self pollination
 - B. Insect pollination
 - C. Cross pollination
 - D. Variability

7. Which one of the following may not be considered as a contraceptive method?
 - A. Rhythm method
 - B. Abstinence method
 - C. Tubal ligation
 - D. Coitus interruptus

8. One advantage of complete metamorphosis over incomplete metamorphosis in insects is that complete metamorphosis
 - A. Occurs faster
 - B. Occurs slowly
 - C. Involves 4 stages
 - D. Reduces competition

9. The figure below shows part of the skin and scales on a fish. The most probable position of the head to the fish is in direction:

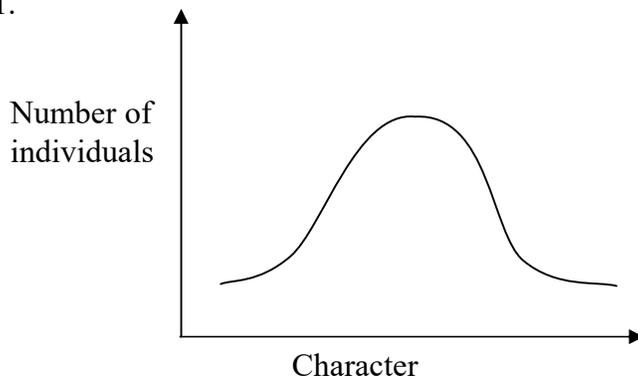


- A.
B.
C.
D.

10. Which one of the following is the major factor in leaching soil?

- A. Large number of micro organisms
B. High nutrient content
C. Large number of macro organisms
D. High rainfall

11.



The following characters may give rise to the curve above except

- A. Height in humans
B. Weight in cattle
C. Skin colour in humans
D. Blood groups in humans

12. Genes on the same chromosome are usually inherited together because they are

- A. Dominant
B. Linked
C. Recessive
D. Co-dominant

13. Amino acids are to proteins as are to starch

- A. Glucose molecules
B. Fatty acid molecules
C. Glycerol molecules
D. Maltose molecules

14. Which combination of the following factors will lead to high transpiration rate?

- i) High temperature
- ii) High humidity
- iii) High atmospheric pressure
- iv) High wind velocity
- v) Low temperature
- vi) Low humidity
- vii) Low atmospheric pressure
- viii) Low wind velocity

- A. i, ii, iii, iv
- B. v, vi, vii, viii
- C. i, ii, iii, iv
- D. i, iv, vi, vii

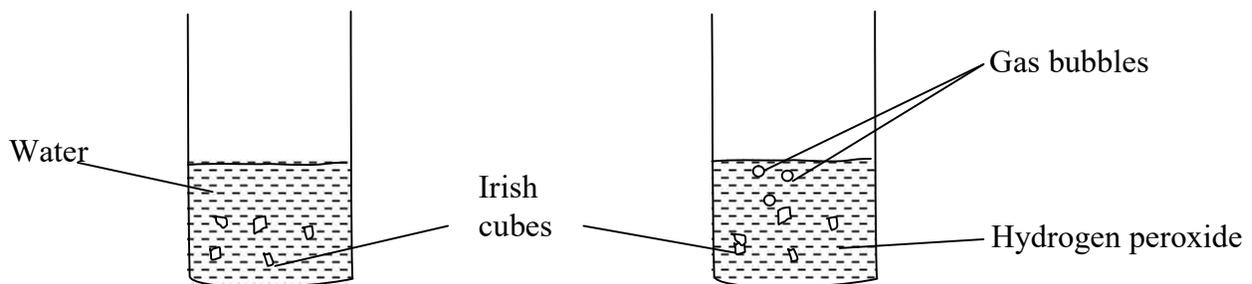
15. Agglutination of blood is most likely to occur when the respective donor and recipient are of blood group

- A. A and AB
- B. B and AB
- C. O and AB
- D. AB and O

16. The major advantage of narrow lumen of arteries is

- A. Fast delivery of metabolites to far organs
- B. Reduced blood pressure
- C. Protection from bursting
- D. Fast return of blood to the heart

17. The enzyme property under investigation in the figure below is that enzymes are



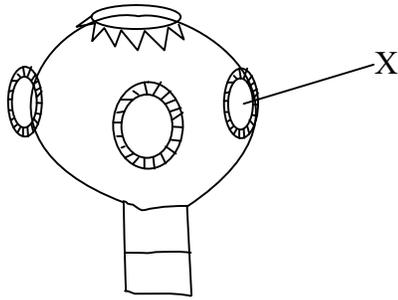
- A. Protein in nature
- B. Specific
- C. Affected by pH
- D. Denatured by heat

18. When Mimosa pudica is touched, its leaves fold, this response belongs to same group as

- A. Growth of plant shoots towards light
- B. Opening of flowers of some plants in the morning
- C. Euglena swimming towards light
- D. Plant shoot growth away from the pull of gravity

19. Which one of the following is a major reason for lack of special excretory organs in plants?
- A. Plants do not excrete
 - B. Plants do not use proteins
 - C. Plants deposit some excretory products in organs which are later shed off
 - D. Plants do not take in oxygen during respiration
20. Which one of the following sets of hormonal deficiency lead to excessive loss of water from the body
- A. Insulin and ADH
 - B. Oestrogen and Insulin
 - C. Thyroxine and ADH
 - D. Oxytocin and insulin
21. Fusion of some bones in birds skeletons is for
- A. Reduction in weight
 - B. Streamlining the body
 - C. Formation of a rigid framework
 - D. Increasing surface area
22. Which one of the following would increase the “green house effect”?
- A. Planting more trees
 - B. Using solar energy instead of fossil fuels
 - C. Building more industries which use petroleum
 - D. Increased use of hydro-electric power, HEP
23. The stage in cell division where synthesis of protoplasm and replication of genetic material is
- A. Prophase
 - B. Interphase
 - C. Metaphase
 - D. Telopahse
24. Insects are one of the most successful classes of animals because of the following except
- A. They lay very many eggs
 - B. Short life cycle
 - C. Many mouth modifications
 - D. Intermittent growth
25. Which one of the following pairs constitutes homologous organs
- A. Wings of a bat and those of insects
 - B. Flippers of whales and wings of a bird
 - C. Hands of humans and wings of insects
 - D. Wings of insects and fins of a fish

26. The figure below shows the scolex of a tapeworm. The part labeled X is used for

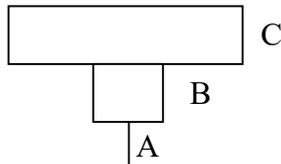


- A. Sight
- B. Feeding
- C. Excretion
- D. Anchorage

27. Products of digestion absorbed into the lacteals are transported by the

- A. Blood capillaries
- B. Lymphatic vessels
- C. Veins
- D. Arteries

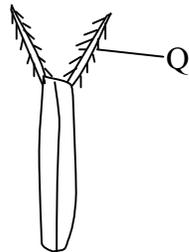
28. The figure below shows an inverted pyramid



Which one of the sets below shows the correct organisms at trophic levels A, B and C in their respective order?

- A. Tree, Birds, Mites
- B. Grass, Cattle, Ticks
- C. Grass, Antelopes, Lions
- D. Trees, Termites, lizards

29. The figure below shows a Bidens fruit



Part labeled Q is formed from

- A. Corolla
- B. Calyx
- C. Style
- D. Filaments

30. A small body needs more covering on a cold day than a big adult because the small body has a
- A. Delicious skin
 - B. Small surface area to volume ratio
 - C. Large surface area to volume ratio
 - D. Low metabolic rate



SECTION B

31. An investigation was carried out into the concentration of lactic acid in the blood of a man before, during and after a vigorous exercise. The results are summarized below.

Time (minutes)	Concentration of lactic acid (mg/100cm ³)
-10	9
0	14
10	80
15	95
20	70
40	35
60	22
80	18

a) Represent the above information on a suitable graph.

b) Where in the human body is lactic acid produced during the exercise?

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c) i) Describe the graph obtained.

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ii) Give reasons for the observed changes in concentration of lactic acid in blood.

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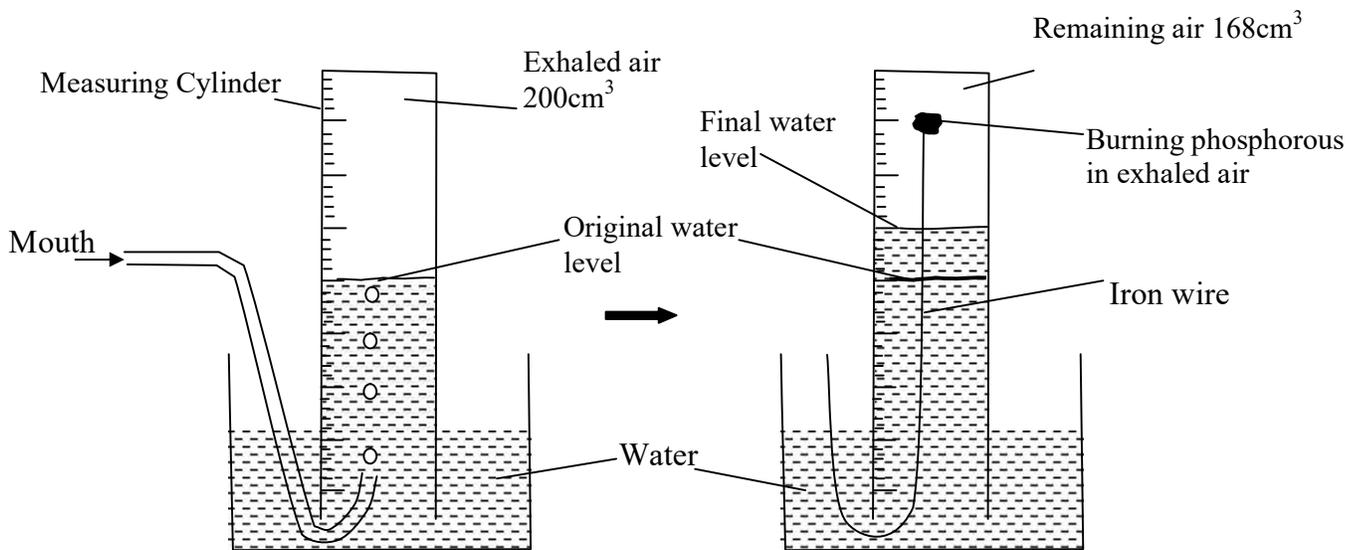
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32. In an experiment, a measuring cylinder was filled with water and then inverted over a delivery tube. 200cm^3 of exhaled air was bubbled into the measuring cylinder. A piece of phosphorus born on a wire was pushed into the exhaled air in the cylinder. After phosphorous stopping to burn, the volume air was 168cm^3 .



a) State the aim of the above experiment

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b) i) Calculate the percentage decrease in volume of air after the burning of phosphorus.

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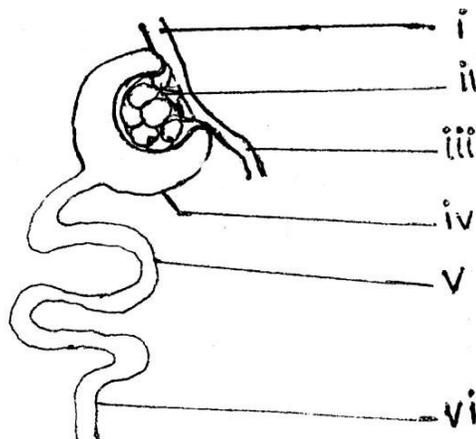
c) Explain why the volume of air decreases at the end of the experiment.

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d) What volume of air would remain if the same volume of atmospheric air was used instead of exhaled air?

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33. The diagram below shows part of the human nephron



- a) Name the labeled parts
- i) iv)
- ii) v)
- iii) vi)
- b) Explain how part (ii) is adapted for its functions
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-
- c) What is the importance of the diameter of vessels (i) and (iii)?
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- d) State the importance of the process which occurs in part(v)
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SECTION C
Answer two questions

34. In which ways is water important to living organisms?
35. a) State the importance of bones in a human body
b) State the difference between an exoskeleton and Endoskeleton
c) Describe the process leading to bending of a human arm.
36. a) Explain how plants adapt for
i) Cross pollination
ii) Wind pollination
iii) Insect pollination
- b) State the differences between the processes leading to fertilization in flowers and humans
37. A cross between Red and White flowered snap dragon plants produces F1 with Pink flowers
- a) Explain the absence of white and red flowered plants in the F1. Fully show your working.
- b) Calculate the genotypic and phenotypic ratios of a cross between F1 plant and a white flowered plant

****END****