Name ----------Number----------
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553/2
BIOLOGY
June/July 2016
2 ½ hours

Uganda certificate of Education
BIOLOGY THEORY
MOCK EXAMINATIONS 2016
2 Hours 30 minutes

INSTRUCTION TO CANDIDATES

- Answer ALL questions in section A and section B plus TWO questions from section C
- For section A put the right alternative in the boxes provided on each question
- For section B fill answers in the space provided
- For section C answer on the answer sheet provided

FOR EXAMINERS USE ONLY

SECTIONS/QUESTIONS	MARKS	EXAMINERS SIGNATURE
A		
31		
32		
33		
C		
C		
T0TAL		

SECTION A (30MARKS)

*Answer **all** questions in this section. Write the letter representing the most correct answer to each question in the box provided.*

1. What is the role of cilia on the trachea?

(A) Moves dirt and mucus away from the lungs
(B) Moves dirt and mucus down the trachea in the lungs
(C) Produces mucus for cleaning the trachea
(D) Prevents food getting into the lungs

2. Which of the following is not an adaptation of respiratory surfaces?

(A) Large surface area
(B) Moist surface
(C) Good supply of blood
(D) Small diffusion distance

3. Which of the following is needed in aerobic respiration but not in anaerobic respiration?

(A) Glucose
(B) enzymes
(C) carbon dioxide
(D) oxygen

4. Which of the following phrases describes a hormone?

(A) An electrical impulse
(B) Biological catalyst
(C) Chemical messenger
(D) substances found only in animals

5 Which of the following is not necessary for germination?

(A) Carbon dioxide
(B) water
(C) oxygen
(D) warmth

6. Which of the following genetic condition is sex linked
(A)sickle cell anaemia
(B)haemophilia
(C)albinism
(D)cystic fibrosis

7. The best way to ensure that yeast added to sugar produces alcohol is by

(A) Supplying a lot of 0xygen to the mixture
(B) Placing the mixture in a warm condition
(C) Excluding air from the mixture
(D) Adding salt to the mixture

8. Which of the following processes is controlled by the cerebrum?

(A) Breathing and heart beat
(B) Memory and voluntary action
(C) Body balance and osmoregulation
(D) Temperature control

9. Which of the following on is not a function of the liver?

(A)Formation of bile
(B)Detoxification
(C)Storage of proteins
(D)Storage of vitamins

10. The function of hydrochloric acid found in gastric juice is to

(A) Soften and lubricate the food
(B) Provide a high pH for the enzymes
(C) Kill the bacteria that comes with the food
(D) Neutralise the food

11. Which of the following pairs below are products of anaerobic respiration in animals.

(A)Energy and water
(B)Ethanol and carbon dioxide
(C)Energy and lactic acid
(D)Ethanol and water

12.Which of the following diseases is not caused by mineral deficiency?

(A)Rickets
(B)Anaemia
(C)Goitre
(D)Scurvy

13.Which of the following glands produces a hormone that directly affects the rate of metabolism in the body?

(A)Pituitary
(B)Ovary
(C)Thyroid
(D)Pancreas

14.Which of the following organisms are photosynthetic?

(A)Decomposers
(B)Producers
(C)Primary consumers
(D)Scavengers

15. Which of the following chemicals below is not an air pollutant?

(A) Carbon monoxide
(B) Carbon dioxide
(C) Sulphur dioxide
(D)Nitrogen

16.Which one of the following factors below is not required by all bacteria for growth?
(A)food

(B)water
(C)minerals
(D)oxygen

17. A reaction that breaks down compounds by the addition of a water molecule is called

(A)Dehydration
(B)Digestion
(C)Hydrolysis
(D)Pinocytosis

18. A plant was found to possess more stomatas on the upper surface than the lower surface. What is the likely habitat for this plant?

(A)Hot desert
(B)Open grassland
(C)Aquatic habitat
(D)Open forest

19. Which one is not the function of the mammalian skeleton?

(A)Protection of delicate internal organs
(B)Formation of blood cells
(C)Formation of calcium
(D)Facilitating movement

20.Where does oxygen produced during photosynthesis come from?

(A)water
(B)carbon dioxide
(C)chlorophyll
(D)sunlight

21. In most animals the inspired and expired air enter and leave through the same route except in

(A)Birds
(B)Insects
(C)Bony fish

(D)Mammals

22. Why should infants be dressed in woolen coats during cold conditions?

(A)The skin of infants are tender so can easily be affected by cold conditions.
(B)Heat loss per unit mass is higher.
(C)The amount of food infants eat cannot produce enough heat.
(D)Body activities that produce heat are reduced.

23.The following are regions of the alimentary canal in humans
(i) Duodenum (ii) Mouth (iii) Stomach (iv) ileum
In which regions does chemical digestion of lipids occur?

(A)i and ii
(B)ii and iii
(C)iii and iv
(D)i

24. uni directional light at the tip of shoots affects auxins by?

(A) Inhibiting the movement of auxins down the plant
(B) Increasing auxins on the illuminated side of the plant
(C) Causing Uniform distribution of auxins at the tip of the plant
(D) Reducing auxins on the illuminated side of the plant

25. Which of the following diseases is caused by lack of an anti-diuretica hormone in the body?

(A) Diabetes mellitus
(B) Anaemia
(C) Diabetes insipidus
(D)Goitre

26 Samples of gastric juice for enzyme analysis are collected from the stomach of new born rats. Which enzyme is likely to be found in large quantities?

(A)Pepsin
(B)Trypsin

(C)Rennin
(D)Gastrin

27.Which ones are the primary organs in human males and females

(A)Testes and vagina
(B)Testes and uterus
(C)Penis and vagina
(D)Penis and ovaries

28. In a certain plant, offsprings of crosses between round seeded and long seeded plants were always oval seeded. If oval seeded plants were self-pollinated which of the following results would be most likely to occur?

(A)25% long seeded,50% oval seeded, and 25% round seeded
(B)100% oval seeded
(C)25% oval seeded,50% long seeded, and 25% round seeded
(D)67% oval seeded and 33% long seeded

29. Which one of the following parts of the ear regulates air pressure?

(A)Ear drum
(B)Oval window
(C)Round window
(D)Eustachian tube

30. Which one of the following structures of dicotyledonous seed is correctly matched to its function?

	Structure	**Function**
A.	Microphyll	Protection
B.	Cotyledon	Store food
C.	Radical	Develops into the shoot
D.	Testa	Allows in air

	Structure	**function**
(A)	Microphyll	protection
(B)	Cotyledon	store food
(C)	Radical	develops into the shoot
(D)	Testa	allows in ai

SECTION B (40 MARKS)

Answer all questions in this section

31. The table below shows results of an experiment carried out to measure the rate of transpiration on the upper and the lower epidermis of three species of plants A, B, and C that have different number of stomata on the upper and lower epidermis.

FEATURE	PLANT SPECIES					
	Plant A.		Plant B		Plant C	
	Upper epidermis	Lower stomata	Upper stomata	Lower stomata	Upper stomata	Lower stomata
Number of stomata on the epidermis	6	30	0	90	0	40
Transpiration rate in arbitrary units	12	15	0	40	20	40

(a) Describe the distribution of the stomata in the upper and lower epidermis of each plant species.

(03marks)

Plant A----------

Plant B----------

Plant C----------

(b) Explain the relationship between stomatal distribution and rate of transpiration for each plant species.

(10marks)

Plant A----------

Plant B---

Plant C---

(c) What would happen to the rate of transpiration if the upper epidermis is smeared with Vaseline?
(03marks)

Plant A---

Plant B---

Plant C---

(d) Which plant species will be well suited for desert conditions? Explain your reason. (02marks)

(e) Apart from stomatal distribution state any other two ways desert plants use to minimize water loss. (02marks)

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32 `An experiment was set up to show the effect of light on growing shoots which were treated differently. There were three sets of growing shoots, as shown below.

Set A had the shoot exposed to light coming from all directions.

Set B had three shoots
(Shoot 1) Was intact
(Shoot 2) The tip was cut off
(Shoot 3) Was intact but with the tip covered in a black polythene

(ii) All the three shoots were placed in a box with an opening on the side that allowed light to enter from one direction.

Set C had a shoot which had a tip cut off then placed on side as shown above. The shoot was the placed in a box without any opening
All three sets were left to stand for 5 days.

(a) State what would be observed in each shoot after 5 days(02 ½ marks)
Set A

Set B
Shoot 1---

Shoot 2 ---

Shoot 3---

Set C

(b) Explain each of the observations stated above in (a) above (06 ½ marks)
Set A---

Set B
Shoot 1(i)---

Shoot 2 (ii)----------

Shoot 3 (iii)----------

Set C----------

(c) What is the significance of the above responses? (01mark)

33.The diagram below shows the external view of the mammalian heart. Study the diagram and answer the questions that follow.

PUT Diagram

(a) Name the parts labeled A to F. (03marks)

A----------

B----------

C----------

D----------

E----------

F----------

(b) What are the functions of the parts labeled (02marks)

D----------

F----------

(c) How is part D adapted to its function? (02marks)

(d) Give one structural and one functional difference between the heart of a mammal and that of a fish? (02marks)

Structural difference

Functional difference

(e) Name one disease associated with the heart. (01 mark)

SECTION C (30MARKS)

Answer any two questions in this section.

34 (a) What is meant by the term placentation? (01 mark)

(b) With the aid of diagrams describe the following types of placentation in fruits.

(10marks)

(i) Marginal placentation
(ii) Axial placentation
(iii) Free central placentation
(iv) Pariental placentation

(c) What is the importance of dispersal? (04 marks)

35 (a) Describe the process through which a meal of posho and beans undergo from the time food is placed in the mouth up to when it is absorbed in the ileum. (07 marks)

(b) How are the products absorbed by the ileum used by the body? (05marks)

(c) State three adaptations of herbivores to ensure they obtain maximum nutrients from plant materials.
(03 marks)

36 (a) Explain the role played by soil organisms in maintaining soil fertility (05marks)

(b) Explain how man's activities degrade soil fertility. (05 marks)

(c) The government recently banned the use of polythene bags. Explain the dangers of using polythene. (05 marks)

37 (a)What is the importance of excretion? (02 marks)

(b) Describe the process of urine formation in humans. (09 marks)

(c) Explain why plants lack elaborate excretory organs. (04 marks)

END