NAME: …… RANDOM NO. ……

CANDIDATE NO. ……

553/1

BIOLOGY

(Theory)

Paper 1

July/August 2018

2 ½ HOURS

ACEITEKA JOINT MOCK EXAMINATIONS 2018
UGANDA CERTIFICATE OF EDUCATION
BIOLOGY
(THEORY)
Paper 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**	**Examiner's Sign & No**
A:		
B: 31		
B: 32		
B: 33		
C:No……		

C:No…….		
TOTAL		

SECTION A

1. Which type of soil has the following properties?

   i) Light to cultivate ii) low water retention iii) low capillarity

   A. Sandy loam
   B. Loamy
   C. Sandy
   D. Clay

2. The main function of the pinna in the mammalian ear is
   A. Regulate pressure
   B. Concentrate the sound waves into the middle ear
   C. Transmit sound to the inner ear
   D. Transmit sound waves to the middle ear.

3. In the body temperature regulation, vasodilatation
   A. Allows more blood to enter the skin capillary network
   B. Allows more urine to be secreted into the bladder
   C. Allows less sweat to be secreted by sweat glands
   D. Decreases heat loss by radiation

4. A homozygous red flowered plant is crossed with a heterozygous red flower. If red is dominant over white, what will be the phenotype of the offsprings?
   A. All white
   B. ½ red and ½ white
   C. ¾ red and ¼ white
   D. All red

5. Which one of the following is not a characteristic of monocotyledonous plants?
   A. Parallel venation
   B. Fibrous roots
   C. Leaf sheath
   D. Cork layer

6. Which of the following causes artificial immunity?
   A. Taking drugs that prevent the disease
   B. Receiving antibiotic injections against the disease

C. Injection with a mild stain of the pathogen
D. Catching the disease and recovering from it

7. The most typical characteristic feature of axis vertebra is the presence of:
   A. A Centrum
   B. Odontoid peg
   C. Demifacets
   D. Long neutral spine

8. The rate of glomerular filtration is lowest in;
   A. Marine vertebrates
   B. Amphibians
   C. Ma
   D. Fresh water animals

9. Primary growth in plants causes increase in?
   A. Length
   B. Number of branches
   C. Thickness
   D. Xylem thickness

10. Which one of the following is an adaptation to ensure effective gaseous exchange in organisms?
   A. Decreased surface area of organs involved
   B. Increased thickness of gas exchange surface
   C. Increased body size of organism
   D. Increase in concentration gradient of gas

11. Lactic acid is likely not to accumulate
   A. When engaged in a vigorous exercise
   B. After breathing in excess carbon dioxide
   C. Deep sleep
   D. After consuming alcohol

12. $I\frac{0}{3}$ C $I\frac{0}{1}$ Pm $\frac{3}{3}$ M $\frac{3}{3}$ is dental formula of
   A. Filter feeder
   B. Herbivores
   C. Omnivores
   D. Carnivores

13. In higher plants the male gametes fuse with
    A. Polar nuclei and egg nucleus
    B. Egg nucleus and synergids
    C. Secondary nucleus and eggs
    D.

14. Too much starch in the diet of a child is responsible for
    A. Pellagra
    B. Rickets
    C. Scurvy
    D. Marasmus

15. What relationship exists between algae and fungus in Lichens?
    A. Parasitism
    B. Saprohytism
    C. Symbiosis
    D. Commensalisms

16. Which of the following is not a protozoa
    A. Filarial worm
    B. Schistosoma
    C. Plasmodium
    D. Amoeba

17. Reptiles are well adapted to living on land due to presence of
    A. Dry epidermal scales and egg membranes
    B. Lungs and egg membranes
    C. Shelled eggs and lungs
    D. Dry epidermal scales and gular crest

18. Which of the following fins provide a steering force in fish?
    A. Dorsal fin
    B. Caudal
    C. Pelvic
    D. Anal

19. Which of the following methods is used in collecting flying insects?
    A. Line transect
    B. Plankton net
    C. Quadrat
    D. Sweep net

20. Which of the following characteristics of feathers does not aid flight in birds?
    A. Being water proof
    B. Being large and broad
    C. Being light
    D. Being fluffed

21. Which of the following is described as sexual reproduction in spirogyra?
    A. Binary fission
    B. Conjugation
    C. Fragmentation
    D. Budding

22. Which of the following parts of a plant cell has a semi-permeable property?
    A. Cell membrane
    B. Nucleus
    C. Cell wall
    D. Protoplasm

23. Which of the following is true about wind pollination flowers?
    A. Produce large and rough pollen grains
    B. Stigma and pollen grains are often sticky
    C. Filaments are flexible and anther loosely attached
    D. Produce scent

24. Which of the following processes increases amount of carbon dioxide in atmosphere?
    A. Photosynthesis
    B. Action nitrifying bacteria
    C. Action of fungi on dead organic matter
    D. Action of denitrifying bacteria

25. Which of the following is true about insect and not Arachnid?
    A. 3 body divisions
    B. Joined appendages
    C. Exoskeleton
    D. Hairy bodies

26. Which of the following organs is responsible for removing excess glucose from blood?
    A. Spleen
    B. Liver
    C. Kidney

D. Gall bladder

27. Osmosis is inhibited in?
    A. Dilute solutions separated by partially permeable membranes
    B. Concentrated solution separated by partially permeable membranes
    C. Living tissues
    D. Killed tissues

28. Which of the following fruits is a schizocarp?
    A. Passion
    B. Blackjack
    C. Desmodium
    D. Coconut

29. Which of the following is the intermediate host for pig-tape worm?
    A. Man
    B. Pig
    C. Cow
    D. Undercooked pork

30. Which of the following is the function of choroid of the mammalian eye
    A. Absorbs light and prevents total internal reflection
    B. Protects the delicate inner layers of the eye
    C. Transmits sensory impulses from the retina to he brain for interpretations
    D. Provides nutrients and oxygen to the cornea and eye lens

SECTION B

31. An experiment was carried out to investigate the effect of smearing jelly on the surfaces of the leaves, on rates of photosynthesis at different light intensities.

Results obtained were recorded as below:

Light intensity in (arbitrary units)	0.1	0.2	0.3	0.4	0.5
Rate of Photosynthesis in leaf A whose both surfaces were smeared.	10	14	16	20	20
Rate of Photosynthesis in leaf B whose upper surface was smeared	25	28	32	35	35
Rate of photosynthesis in leaf C whose under surface was smeared	20	21	25	28	28
Rate of Photosynthesis in lead D whose both surfaces were not smeared with jelly	30	35	40	45	45

a) Plot the graphs to show how rate of photosynthesis vary in leaves A, B, C, and D at different light intensities (in arbitrary units) *(7½ marks)*

b) How does smearing of jelly affect the rates of photosynthesis in leaves A, B, C, and D?

Leaf A *(1 ½ marks)*

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Leaf B *(1 ½ marks)*

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Leaf C *(1 ½ marks)*

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Leaf D *(1 ½ marks)*

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c) i) Give any one reason why the rate of photosynthesis at light intensities of 0.4 and 0.5 are the same? *(1 mark)*

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ii) What is the optimum light intensity for photosynthesis in leaves A, B, C, and D?

(1 mark)

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d) How does each of the following adaptations influence photosynthetic rates?

i) Numerous chloroplasts *(1 mark)*

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ii) Large intercellular air spaces *(1 mark)*

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iii) Possession of thin transparent epidermis *(1 mark)*

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iv) Network of vascular bundles *(2 marks)*

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32. a) The figure below shows part of the central nervous system and reflex arc.

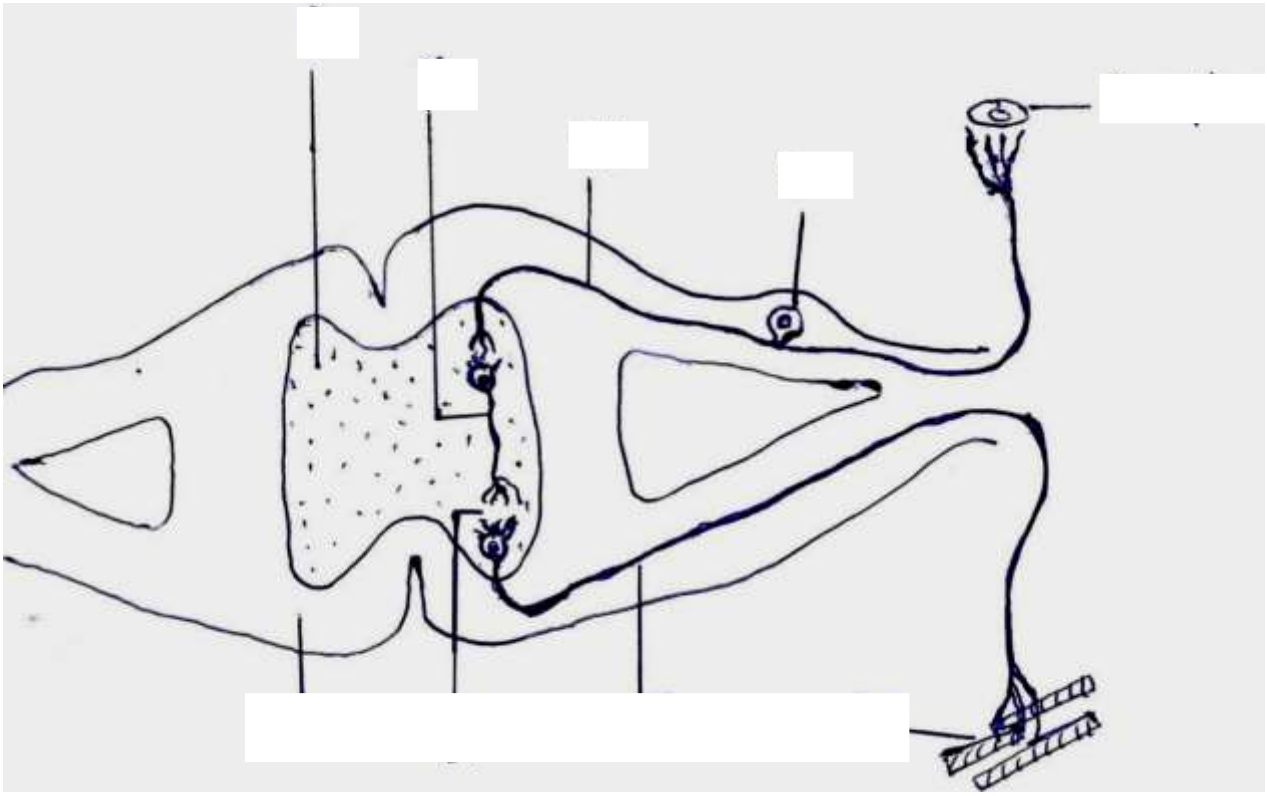
(i)

(ii) Receptor

(iii)

(iv)

(v) (vi) (vii) (viii)



a) Name the labeled parts. (4 marks)

i) ..... v).....

ii) ..... vi) .....

iii) ..... vii) .....

iv) ..... viii) .....

b) Draw arrows on the above diagram to show the direction of impulse flow. (1 mark)

c) Briefly describe how impulses are transmitted across part (vi). (3 marks)

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d) Give one example of a simple reflex action and its signature. (2 marks)

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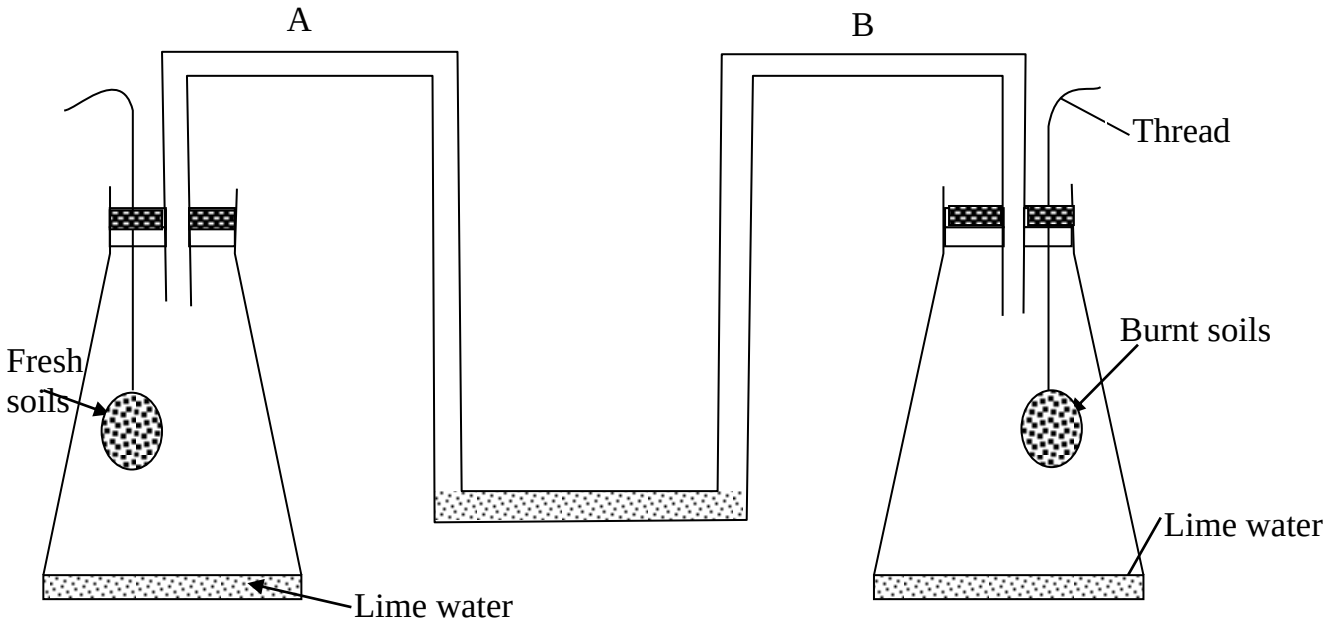
33. The setups below were done by students of S.2. Study the arrangement and answer the questions which follow:



a) i) What were these students investigating?

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ii) Why is lime water used in both flasks A and B?

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b) i) What would you observe if the experiments are left to continue for a few hours? Give reasons for your observations?

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ii) Outline two uses of the components of soils being investigates above?

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SECTION C: (30 MARKS)

Answer two questions only. Additional question answered will not be marked.

34. State the adaptations of the human skin for its functions. (15 marks)

35. a) What is excretion? (2 marks)

b) Using named examples of excretory products, explain the importance of excretion. (7 marks)

c) State the role of the following parts of the human nephron: (6 marks)

i) Glomerulus

ii) Bowmans capsule

iii) Proximal convoluted tubule

36.(a) Briefly describe the role of each one of the following during gaseous exchange in bony fish.

(i) The mouth (3 marks)

(ii) The buccal cavity (5 marks)

(b) Compare the process of inhalation with that of exhalation in man. (7 marks)

36. A cross between pure breeds of red and white snap dragon flowers produces pink flowered plants in the **F1**.

a) Explain the absence of red and white flowers in the **F1**, (3 marks)

b) Using suitable symbols, work out the number of plants of the different phenotypes out of a total of **200 F2** plants produced. (12 marks)

END