Name:.....

Index No:..... Signature:.....

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BIOLOGY
(THEORY)
PAPER 1
JULY/AUGUST 2022

2 ½ HOURS

ASSHU MBARARA JOINT MOCK EXAMINATIONS
Uganda Certificate of Education
BIOLOGY
PAPER 1
2hours 30minutes

INSTRUCTIONS TO CANDIDATES

The paper consists of section A, B and C.
Answer ALL questions in Section A and B plus Two in section C.
~~Write~~ answers to section A in Boxes provided, section B in spaces provided and C in the booklet provided.

FOR EXAMINERS' USE ONLY			
SECTION		MARKS	EXAMINER'S SIGNATURE
A			
B	NO.31		
	NO.32		
	NO.33		
C	NO.....		
	NO.....		
TOTAL			

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. Which of the following organisms excretes ammonia?
   A. Tad pole
   B. Marine fish
   C. Lizard
   D. Hen

2. Bacteria are important for soil fertility because they
   A. are responsible for formation of humus
   B. burrow and loosen the soil
   C. prevent formation of nitrate
   D. change nitrates to atmospheric nitrogen

3. Which of the following lists contains only arthropods?
   A. insects, annelids, crustaceans
   B. insects, chilopods, nematodes
   C. crustaceans, insects, molluscs
   D. arachnids, crustaceans, diplopods.

4. A team of ecologists captured 25 rodents marked and released them back to their habitat. After one week, they captured 44 rodents out of which 9 had been marked. What is the estimated total population of the rodents?
   A. 77
   B. 9675
   C. 122
   D. 68

5. An albino offspring will most likely come from a cross between
   A. a carrier mother for albinism and a normal father
   B. both parents who are normal
   C. an albino father and a normal mother
   D. both parents who are carriers for albinism.

6. Which of the following organisms has the largest surface area to volume ratio?

A. Lion
B. Shrew
C. Elephant
D. Cat

7. In a mammalian heart, the left ventricle is more muscular than the right ventricle because it

A. pumps a lot of blood to the lungs
B. receives blood from all parts of the body.
C. pumps blood to all parts of the body
D. receives oxygenated blood from the lungs

8. When the leaves of *Mimosa pudica* are touched, they told. This type of response is

A. Geonastic response
B. Chemonastic response
C. Photonastic response
D. Thigmonastic response

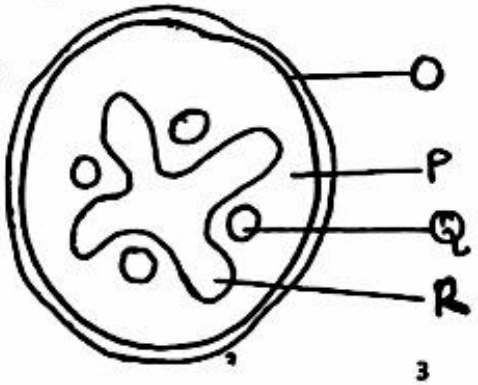
9. Which of the following glands releases secretions into blood in order to reach the target organs?

A. Pituitary gland
B. Sweat gland
C. Sebaceous gland
D. Salivary gland.

10. Which of the following characteristics vary continuosly?

A. Skin colour, albinism and hair length
B. Height, intelligence and skin colour
C. Body weight, blood groups and sex
D. Tongue rolling, hair length and sex.

11. The figure below is a transverse section of a root.



Which one of the parts labeled is responsible for the conduction of mineral salts and water?

A. O
B. P
C. Q
D. R

12. Which of the following sets of hormones is produced by mammalian reproductive organs?

A. Follicle stimulating hormone and testosterone
B. Progesterone and testosterone
C. Oestrogen and Luteinising hormones
D. Follicle stimulating hormone and oestrogen

13. In a certain plant, off springs of crosses between round-seeded and long-seeded plants were found to be oval seeded. Which one of the following results would be most likely to occur if oval-seeded plants were self pollinated?

A. 67% oval-seeded, 33% long-seeded
B. 25% long-seeded, 50% oval-seeded, 25% round-seeded.
C. 25% oval-seeded, 50% long-seeded, 25% round-seeded
D. 100% oval-seeded.

14. In a flowering plant translocation of photosynthetic products occurs in

A. Xylem vessels
B. Sieve tubes
C. companion cells
D. Schlerencyma

15. The path taken by an impulse after a relay neurone is

A. Motor neurone, spinal cord, muscle
B. Sensory neurone, synapse, mortor neurone
C. Synapse, mortor neurone, muscle.
D. Mortor neurone, synapse, sensory neurone.

16. During investigation, the following setups were made.

Set up	Procedure
A.	Egg white + Trypsin + Hydrochloric acid
B.	Egg white + Hydrochloric acid
C.	Egg white + Trypsin + Boiling
D.	Egg white + Trypsin

In which of the setups will the mixture clear?

17. Which one of the following contains a set of characteristics which are all for wind-dispersed fruits and seeds?
A. Paracute-like, winged and spiked
B. Paracute-like, hooked and light
C. Dry, curled inwards and light
D. Winged hooked and buoyant.

18. Which of the following events result into the formation of identical twins?
A. One egg released, fertilized and split into two
B. Two eggs released and fertilized by separate sperms
C. One egg released and fertilized by separate sperms
D. One egg released, splits into two and each fertilized.

19. Which of the following conditions shows deficiency of calcium?
A. Leaves with yellow edges
B. very poor leaf growth
C. very poor root growth
D. Leaves turn yellow.

20. The condition that makes a person to hold a book at arm's length when reading is
A. The eyeball is larger than the eye
B. The eyeball has shrunk due to ageing
C. The refractive power of the lens increased
D. The refractive power of the lens has decreased

21. Production of many pollen grains is an adaptation for

A. Cross pollination
B. Insect pollination
C. Wind pollination
D. Self pollination

22. The following are features found in birds

i) Light bones
ii) Webbed feet
iii) Long neck
iv) Streamlined body

Which of the features are adaptations for flight?

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

23. At which stage of mitosis do chromatids separate?

A. Prophase
B. Metaphase
C. Anaphase
D. Telophate

24. Which of the following is a difference between growth of a grasshopper and that of rat?

	Growth of grasshopper	Growth of a rat
A.	Not continuous	Continous
B.	Hormones involved	No hormones involved
C.	Very fast	Very slow
D.	Involve eggs	Docs not involve eggs

25. Which of the following secretions are produced by the duodenum when food reaches the duodenum?

A. Trypsin
B. Secretin
C. Proteases
D. Sucrase

26. The increase in girth of a woody stem is associated with.

A. Primary growth
B. Secondary growth
C. Lateral growth
D. Horizontal growth.

27. Which of the following organisms uses a flagellum for locomotion?

A. *Paramecium*
B. *Amoeba*
C. *Euglena*
D. *Plasmodium*

28. Which of the following are excreted by both kidney and skin?
A. Salts, excess water and Urea.
B. Excess water, used hormones, and salts
C. Carbon dioxide, excess water and urea
D. Used hormone, salts and ammonia

29. Which one of the following tissues have cells with thinner cellwalls?
A. Xylem
B. Phloem
C. Epidermis
D. meristems

30. At which blood vessel do fatty acids absorbed into lacteals enter the general blood circulation?
A. Left subclavian vein
B. Left inferior venacava
C. Right inferior venacava
D. Hepatic portal vein

SECTION B(40marks)

Answer <u>all</u> questions in this section

Answers <u>must</u> be written in spaces provided.

31. The table below shows the environmental temperature and body temperature of animals M and N. Both animals were exposed to the same environmental temperature for a period of 12hours of the day.

Time in hours	Temperatute (^{0}C)		
	Environment	Animal M	Animal N
0700	10	12	37
0800	14	16	37
0900	20	22	37
1000	24	26	37
1100	30	32	37
1200	36	36	37
1300	32	34	37
1400	28	26	37
1500	22	20	37
1600	21	20	37
1700	21	20	37
1800	21	20	37

a) Plot a graph of temperature with time in the space below *(7marks)*

b) Describe how the body temperature of the animals varies with environmental temperature *(3marks)*

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c) Giving a reason, state the name given to the group of organisms represented by animals M and N *(2marks)*

i) Animal M: .....

Reason:.....

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ii) Animal N: .....

Reason:.....

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d) Describe how the body of animal N responds to

i) Low temperature *(3marks)*

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ii) high temperature *(3marks)*

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e) What advantages does animal N has over animal M? *(2marks)*

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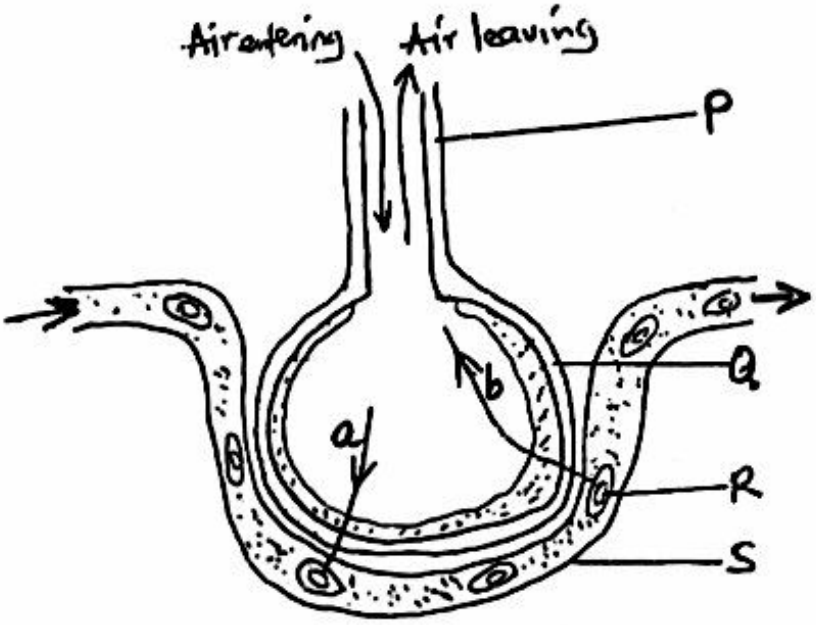
32. The figure below shows the structures concerned with gaseous exchange in a mammal.



a) Name the structures labeled *(2marks)*

P..... R.....

Q..... S.....

b) State any 4 differences in composition between air entering and air leaving the structure *(4marks)*

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c) Explain how structure labeled R is suited to carry out its function

(4marks)

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33. In a certain ecosystem, hawks feed on snakes, toads and chicken. The snakes feed on toads, lizards and chicken while these feed on worms, termites and grasshoppers. The worms, termites and grasshoppers feed on green plants.

a) (i) Construct a food web to show the feeding relationship between all the organisms in this ecosystem. *(4marks)*

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(ii) Construct a food chain to show the feeding relationship between snakes, worms, toads, hawks and green plants *(1mark)*

(iii) From the food chain in a(ii) above, construct a pyramid of energy to represent the feeding relationship *(2½marks)*

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b) (i) What trophic levels do the following organisms occupy in this ecosystem? *(1½marks)*

Chicken .....

Termites .....

Green plants .....

(ii) Why are trophic levels in a food chain normally not more than five? *(1mark)*

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SECTION C (30MARKS)

Answer any two questions from this section

Answers are to be written in the answer sheets provided.

34.(a) Describe how urine is formed by the mammalian kidney *(10marks)*

(b) Explain five ways how plants living in arid conditions are adapted for survival *(5marks)*

35.(a) State any five adaptations of palisade mesophyll layer of a leaf for photosynthesis *(5marks)*

(b) Describe an experiment to show that Light is necessary for photosynthesis *(10marks)*

36.(a) Giving atleast one example, in each case, describe any five forms of asexual reproduction *(11marks)*

(b) State four advantages of cross pollination *(4marks)*

37.(a) State the importances of water to living organisms? *(6marks)*

(b)(i) Explain how human activity pollutes water bodies *(5marks)*

(ii) How can water pollution be solved? ***(4marks)***

END