CANDIDATES NAME...................................................................................................

INDEX NUMBER.................................................SIGNATURE......................................

P530/1

**BIOLOGY**

**PAPER 1**

JULY/ AUGUST 2016

2 ½HOURS

NTUNGAMO PRIVATE SECONDARY SCHOOLS

JOINT MOCK EXAIMINATIONS

Uganda Advanced Certificate of Education

**BIOLOGY**

**PAPER1**

2HOURS 30 MINUTES

**INSTRUCTIONS TO CANDIDATES:**

This paper consists of sections A and B.

Answer **all** questions in both sections

SECTION A; Write answers to this section in the boxes provided.

SECTION B: Write answers to this section in the spaces provided

**FOR EXAMINER’S USE ONLY**

|  |  |  |
| --- | --- | --- |
| SECTION | | MARKS |
| A : 1-40 | |  |
| B: | 41 |  |
| 42 |  |
| 43 |  |
| 44 |  |
| 45 |  |
| 46 |  |
| TOTAL | |  |

**SECTION A: (40 MARKS)**

**Write the letter to the correct answer in the corresponding box. Each question in this section carries one mark.**

1. Which one of the following biological processes does not utilize respiratory energy?

A. Loss of water from the stomata. B. Mineral salt absorption

C. Synthesis of cellulose D. Meiosis

2. Which of the following is the correct order of electron transfer during the cyclic

Photophosphorylation?

A. Chlorophyll Ferredoxin Cytochrome Chlorophyll

NADP

B. Chlorophyll Ferredoxin Chlorophyll

Chlorophyll

C. Chlorophyll NAD

NADP

Ferredoxinn

Cytochrome

D. Chlorophyll

Chlorophyll

3. The lymphatic system is important in:

A. Promoting blood clotting

B. Transporting hormones around the body

C. Distribution of body heat

D. Draining excess tissue fluid into the blood circulatory system.

4. Which one of the following best explains why fat digestion does not occur in the human stomach?

A. Fat digestion is only possible in the mouth.

B. PH of the stomach is too high for lipase to function

C. Lipases are active within a wide range of PH.

D. Bile salts that emulsify fats are missing in the stomach.

5. Which of these is a function performed by chiasmata? They:

A. Facilitate separation of homologous chromosomes

B. Facilitate separation of sister chromatids

C. Enable exchange of genetic material between homologous chromatids

D. Enable exchange of genetic material between sister chromatids

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

A. Matrix of mitochondrion B. Cristae of mitochondrion

C. Cytoplasm of a cell D. Outer membrane of mitochondrion

7. In the gastric glands, the digestive enzymes and hydrochloric acid are produced by the following cells respectively.

A. Oxyntic cells and peptic cells. B. Kupffer cells and oxyntic cells.

C. Kupffer cells and peptic cells. D. Peptic cells and oxyntic cells.

8. Which one of the following represents the correct order of structures through which light passes before striking the retina?

A. Conjunctiva, cornea, aqueous humour, lens, vitreous humour, retina

B. Cornea, conjunctiva, vitreous humor, lens, aqueous humour, retina.

C. Conjunctiva, cornea, vitreous humour, lens, aqueous humour, retina

D. Conjunctiva, cornea, lens, vitreous humour, aqueous humour, retina

9. The inability to see clearly immediately after one enters a dark room from bright light could be due to :

A. Denatured rods B. Denatured cones

C. Rhodopsin being resynthesized D. ATP being resynthesized

10. Some organisms increase in population when their age ratio stabilizes at optimal

environmental conditions. This is an example of:

A. Biotic potential B. Balance in nature

C. Carrying capacity D. population density

11. Changes in carbondioxide concentration in the mammalian blood is detected by the

A. Carotid and aortic bodies B. Medula oblongata

C. Cardio vascular centers D. Hypothalamus

12. Which one of the following is **NOT** a transmitter substance?

A. Cholinesterase B. Atropine

C. Acetylcholine D. Noradrenaline

13. Which of the following statements about immunity is incorrect?

A. Antibodies are special proteins

B. Antibodies are produced against specific antigens

C. Antigens can be proteins on a foreign microbe

D. Heat treated bacteria become antibodies when injected into an animal

14. The form of isolation that leads to the emergence of several species in a locality is:

A. Geographical isolation. B. Ecological isolation.

C. Behavioral isolation. D. Reproductive isolation.

15. Cytoplasmic a strands that join cells to one another are referred to as:-

A. Nuclear fibres B. Cilia

C. Basal bodies D. Plasmodesmata

16. The matrix in cartilage is secreted by

A. Osteoblasts B. Chondrocytes

C. Fibroblasts D. Osteoclasts

17. Which one of the following groups of organisms exhibits radial symmetry?

1. Protozoa 2. Coelenterates 3. Annalids 4. Nematodes

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

18. The figure below shows the survivorship curves for different organisms

Which organism must have a reproductive rate to survive?

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

Number of Survivors

P

Q

R

Time

19. Which one of the following cells is haploid?

A. Primordial germ cell B. Primary spermatocyte

C. Spermatogonium D. Secondary spermatocyte

20. The gene for albinism is recessive to that for normal skin pigment in humans. In

population where the frequency of the albinism- causing allele is 10%, the expected proportion of the albinos in the population would be:

A. 0.1 B. 0.01 C. 0.8 D. 0.9

21. One reason why lipids are better energy sources than carbohydrates is that they:

A. Are insoluble B. Do not form hydrogen bonds with water.

C. are more compact D. Have a higher proportion of hydrogen.

22. Which one of the following events occurs both in mitosis and meiosis?

A. Synapsis B. DNA Synthesis

C. Crossing over D. Halving of chromosome number

23. Which one of the following could result from low levels of progesterone during

gestation?

A. Miscarriage B. Parturition C. Menstruation D. Lactation

24. What is the advantage of fragmentation over conjugation as a means of reproduction in spirogyra?

A. Varied offspring are produced

B. Fast-growing offspring are produced

C. Many offsprings are produced

D. More resistant offspring are produced

25. Which one of the following epithelial tissues lines blood capillaries?

A. Cuboidal tissue B. Squamous tissue

C. Columnar tissue D. Glandular tissue

26. Which one of the following process does not involve osmosis?

A. Movement of water into guard cells

B. Movement of water through the xylem

C. Entry of water into the vacuole

D. passage of water across the endodermis

27. Which one of these is **not** true about the lock and key theory in an enzyme – catalyzed reaction?

A. A small change in the active site alters the enzyme effectiveness

B. The substrate and active site are complementary

C. Enzyme catalyzed actions go through the enzyme- substrate complex stage

D. A molecule which fits in the active site is a substrate.

28. Which one of the following is responsible for increasing the pressure of blood following in veins, back to the heart?

A. The pumping action of the heart B. Contraction of skeletal muscles

C. Closing of valves D. Inspiratory movements of muscles.

29. Which one of the following does **not** occur during photorespiration?

A. Oxygen is used up. B. Wasteful loss of carbon as carbondioxide

C. Carbondioxide is used up D. Wasteful loss of energy

30. The biomass of consumers is always less than that of producers because:

A. Producers have to support consumers B. Consumers have a low productive rate

C. Energy is lost through body processes of consumers

D. Consumers are small in size

31. Marine cartilagenous fish solves its osmoregulatory problems by:

A. Swallowing sea water and having few glomeruli

B. actively extruding salts

C. Retaining urea to increase the osmotic potential of the body fluid

D. Excreting trimethylamine oxide

32. Which one of the following plant tissue have cells with walls **least** adapted for support?

A. Scterenchyma B. Collenchyma C. Tracheids D. Xylem vessel

33. Which one of the following pairs of response in plants is caused by unequal distribution of auxins?

A. Photoperiodism and phototropism B. Geotropism and phototropism

C. Nastic movement and geotropism D. Phototropism and abscission

34. An impulse crosses a synapse by means of:

A. Sodium ions B. Potassium ions

C. Calcium ions D. Neurotransmitter chemical

35. Which one of the following would occur at the onset of an action potential in a neurone?

A. Potassium ions enter B. Sodium ions leave

C. Potassium ions leave. D. Sodium ions enter

36. Which one of the following activities in living organisms can result in a respiratory

quotient of less than 1.0?

A. When carbohydrates are respired

B. During extensive laying down of fat in livestock

C. At compensation point during photosynthesis

D. When the rate of exhalation equals that of inhalation

37. The lack of a nucleus in the red blood cell enables it to:

A. Have a high affinity for oxygen B. Be more permeable to oxygen.

C. Give up oxygen more readily D. Contain more haemoglobin

38. Which of the following types of behavior is least learnt?

A. Association B. Instinct C. Imprinting D. Insight

39. The primary meristematic tissue in plants which gives rise to the cortex is the

A. Ground meristem B. Procambium C. Protoderm D. Protoxylem

40. Insects have different mouth parts modified to suit their different modes of feeding.

This shows:

A. Speciation B. Convergent evolution

C. Divergent evolution D. Development of analogous structures

**SECTION B (60 MARKS)**

Write answers in the spaces provided

41(a) (i). What is meant by the term accommodation of the eye? **02mks**

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(ii). How is the size of the pupil adjusted as a mammal moves from dim light to

bright light? **02mks**

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(b). Explain each of the following:

(i). Cone cells are better than rod cells at distinguishing objects close together. **03mks**

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(ii). Rod cells are more sensitive than cone cells to very low light intensities **O3mks**

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42. The graph below shows changes in the dry mass of embryo and endosperm during germination of maize grains in light conditions

Embryo

Dry Mass (g)

Endosperm

Time from sowing (days)

(a). Explain the changes in relative drymass of the

(i). Endosperm **03mks**

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(ii). Embryo **02½mks**

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b). (i) On the graph above, Sketch a curve to show the changes in the total dry mass of the maize grains **01mk**

(ii). Explain the shape of the curve sketched in b (i) above **3½mks**

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43(a). Give one ecological importance of each of the following structural arrangements in plants

(i). Monoecious **02mks**

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(ii). Dioecious **02mks**

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(b). Explain why:

(i). In dioecious plants, male plants are usually associated with dry soils where female plants are associate with moist soils **02mks**

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(ii). Nearly all dioecious plants are wind pollinated **02mks**

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(c). Give one reason why dioecious plants are rarer than monoecious plants **02mks**

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44(a). What is meant by the term alternation of generations? **02mks**

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(b). State:

(i). The stage in the life cycle of a bryophyte where meiosis occurs? **01mk**

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(ii). Two ways in which the alternation of generations in the life cycle of a bryophyte differs from that found in flowering plants **02mks**

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(c) (i). How does spore production in ferns contribute to genetic variation in ferns? **02mks**

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(ii). Give three ways in which ferns are better adapted to terrestrial life than mosses

**03mks**

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45 (i). Describe **five** structural adaptations in birds which have enabled them have successful aerial life. **05mks**

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(b). How does flight in birds differ from that in insects? **05mks**

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46(a). Explain the biological significance of the following forms of behavior

(i). Territorial behavior **04mks**

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(ii). Courtship. **03mks**

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(b). Distinguish between learned and instinctive behavior **03mks**

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**END**