**Name:…………………………………………Index No………………Signature…………**

**553/1**

**BIOLOGY**

**THEORY**

**PAPER**

**JUNE/JULY**

**TIME: 2 ½ HOURS**

**MOCK EXAMINATIONS (S.1 and S.2 Work)**

**UGANDA CERTIFICATE OF EDUCATION**

**BIOLOGY**

**PAPER 1**

**2 HOURS 30 MINUTES**

***Instructions to candidates***

* Answer **ALL** questions in section **A** and **B**, plus **two** questions in section **C.**
* Write the answers to section **A** and **B** in the spaces provided and answers to section **C** in the answer booklet provided.

|  |  |  |
| --- | --- | --- |
| **For examiners use only** | | |
| Question | Marks | Examiner’s signature |
| A: |  |  |
| B: No. 31  No. 32  No. 33 |  |  |
| C: No.  No. |  |  |
| **Total** |  |  |

**SECTION A (30 MARKS)**

Attempt all questions in this section

Write your answers in the table at the end of section A

1. In an analysis of soil sample the following results were obtained: volume of the soil = 200cm3, volume of water added= 300cm3, volume of the water plus the soil after stirring = 450cm3. Calculate the volume of air in the soil sample.
2. 10% B. 20% C. 25% D. 30%
3. The amount of light directed through the focusing system of a microscope is determined by the
4. Diaphragm B. Mirror C. objective lens D. Eye piece lens
5. A patient of blood group O can only be transfused with blood group O because the patient’s blood has
6. Antigens A and B
7. No antibodies
8. Antigen A
9. Antibodies A and B
10. Which of the following blood vessels has the lowest concentration of urea?
11. Hepatic portal vein
12. Renal artery
13. Hepatic vein
14. Renal vein
15. Which one of the following is absent in the epidermal cell of a plant leaf?
16. Cellulose
17. Chloroplast
18. Nucleus
19. Cell membrane
20. Which of the following activities may cause pollution of water.
21. Mining
22. Over caltivation
23. Bush burning
24. Excessive use of fertilizers
25. The reason why healthy plants don’t grow well in water lodged soils is that ;
26. Mineral salts are diluted
27. The soils become too cold
28. Mineral salts are leached
29. There is poor aeration
30. Bile is important in food digestion in the duodenum because it;
31. Breaks down fats anto fatty acids and glycerol
32. Provided suitable medium for enzyme action
33. Catalyses the process of digestion
34. Activates the digestive enzymes
35. The following are strategies of a parasite to survive except;
36. Inflicting minimum harm to the host
37. Affecting a wide range of hosts
38. Killing its hosts
39. Employing an intermediate host
40. Wind pollinated flowers have;
41. Loosely held anthers
42. Fused stamens

1. Small anthers
2. Stigma above the anthers
3. A leaf is usually boiled in water when testing for starch in order to;
4. Remove the chlorophyll
5. Obtain cooked starch
6. Kill the micro organisms in the leaf
7. Burst the starch grains and chlorophyll
8. Which of the following would increase the rate of diffusion
9. Lowering the temperature
10. Reducing the concentration gradient
11. Increasing the surface area
12. Increasing the diffusion distance
13. Which of the following is the characteristic of arteries to withstand high pressure
14. Having elastic walls
15. Possession of wide lumen
16. Being long
17. Possession of valves
18. A mutualistic association of bacteria with plant roots is an indication that ‘
19. The plant is unhealthy
20. The roots have been attacked by diseases
21. The soils around the roots lack nitrogen
22. Humus is lacking the soil
23. Which of the following results in the lowest rate of transpiration
24. Hot and windy B. cold and windy C. Hot and humid D. cold and humid

1. Which of the following is not a characteristic of leaves for carrying out photosynthesis?
2. Chlorophyll B. Waxy cuticle C. thin lamina D. numerous veins
3. Which one of the following set of characteristic classify arachnids?
4. Compound eyes and two main body parts
5. Eight legs and three main body parts
6. A pair of antennae and eight legs
7. No antennae and has eight legs
8. The lamina of a compound leaf
9. Divides into few lobes
10. Divides into stalked lobes
11. Divides into many lobes
12. Divides into three leaflets

1. The endodermis of a stem cross section stains blue-black with iodine solution because it
2. Manufactures starch
3. Stores starch
4. Transports starch and sugars
5. Stores starch and sugars
6. A housefly is adapted to quick transfer of diseases due to possession of
7. Hairy body
8. Expended proboscis
9. A pair of wings
10. Big compound eyes
11. Strong heating of the soil sample is aimed at ;
12. Removing air
13. Removing water
14. Removing organic matter
15. Destruction of soil structure
16. Earth worms improves organic content of the soil by
17. Digging burrows
18. Releasing faecal materials
19. Mixing up soil particles
20. Feeding on dead matters
21. Absence of calcium to green plants leads to
22. Little growth B. poor root development C. yellow leaves D. stunted growth
23. Which one the following organic substances may not cause harm to man if contained in small amount in the body.
24. Vitamins
25. Hormones
26. Minerals
27. Enzymes
28. Fungi like mucor promote growth of green plants by
29. Recycling energy
30. Decomposing green plants after death
31. Recycling nutrients
32. Adding humus to soil after death
33. The lymphatic system is like the circulatory system in that they both
34. Have nodes
35. Have capillaries
36. Have a network of arteries
37. Are closed system
38. Which one of the following is a structural adaptation of a root hair to high rate of water absorption
39. Being numerous
40. Contains xylem vessel
41. Thin membrane
42. Being highly concentrated
43. The following are characteristics of blood vessels
44. Presence of values
45. Thick walls
46. Wide lumen
47. Elastic walls

Which of the characteristics belong to veins

1. (i) and (ii) B. (i) and (iii) C. (ii) and (iii) D. (iii) and (iv)
2. Which one of the following is not transported in blood.
3. Amylase B. Urea C. Insulin D. Sodium chloride
4. Mode of nutrition of rhizopus is
5. Heterotrophism
6. Autotrophism
7. Saprophytism
8. Parasitism

**SECTION B (40 MARKS)**

Answer ALL questions in this section. Your answers in the spaces provided at the end of each question.

1. The figure below shows the amount of different nutrients in food as food passes along the alimentary canal. The width of each band shows the amount of nutrients. Study it carefully and answer the following questions:

|  |  |  |  |
| --- | --- | --- | --- |
| Nutrients | Part of the elementary canal | | |
| Mouth | Region X | Duodenum and ileum |
| A |  |  |  |
| B |  |  |  |
| C |  |  |  |

(a)(i) Identify region X of the alimentary canal (1mk)

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(ii) Describe the digestion of each food substances at it moves along the alimentary canal

(5mks)

A: …………………………………………………………………………………………………………………………………….…..……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………...........

B:

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b) Suggest the types of food each of A, B, and C would be giving a reason for each case.

(4 ½ mks)

A: …………………………………………………………………………………………………………………………………….…..……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………...........

B:

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c) Using the figure and your own knowledge, explain what happens to food component A from the time it enters the mouth to when it leaves the ileum. (4mks)

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d) Explain why the amount of B doesn’t begin to decrease immediately after entering the duodenum. (2 ½ mks)

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e) Giving a reason, why are all food substances do not get digested in all parts of the alimentary canal? (2mks)

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1. The apparatus set up below is aimed to study a biological experiment

Light

Transparent bell jar

Potted plant

‐‐‐‐‐‐‐‐‐‐‐‐‐‐‐‐ Oil

Vaseline

a)(i) What is the aim of the set up above ( ½ mk)

…………………………………………………………………………………………………………………………………………

(ii) What is the role of ( 1 ½ mks)

Oil ……………………………………………………………………………………………………………………………………

………………………………………………………………………………………………………………………………………..

Vaseline …………………………………………………………………………………………………………………………..

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Transparent bell jar …………………………………………………………………………………………………………

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b(i) State the three other environment factors that may affect the results in experiment above (3mks)

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(ii) Explain how each of the factors given in b(i) above affect the result on experiment above (5mks)

1. In an experiment, potato cylinders were placed in solutions of various sugar (sucrose) concentration for 2 hours. The results were recorded in the table below;

|  |  |  |
| --- | --- | --- |
| Concentration of sugar solution % | Initial length of potato cylinder in cm | Length of potato cylinder after 2 hours in cm |
| 0% (distilled water) | 4.00 | 4.30 |
| 5% | 4.00 | 4.00 |
| 50% | 4.00 | 3.70 |
| Left in open air | 4.00 | 3.95 |

1. Explain the change in size of
2. Cylinder placed in distilled water (3mks)
3. Cylinder placed in 50% sucrose solution (3mks)

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1. What is the approximate sugar concentration of potato cell sap? Explain your answer. (2mks)

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1. Account for the change in length of the potato cylinder placed in open air. (1mk)

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**SECTION C (30 Marks)**

*Attempt only two questions from this section write your answers in the answer sheet provided*

1. With the aid of diagram, describe the movement of water in a woody plant from the time it is absorbed from the soil up to when it is lost into atmosphere.
2. (a) Define
3. Blood (1mk)
4. Double circulation (1mk)

(b) Describe how a molecule of water in the ileum capillaries reaches alveolus of the

lungs (5mks)

(c) How is blood adapted for its functions (8mks)

35. (a) State five methods used to conserve soil (5mks)

(b) Explain how each of the methods stated above enables the soil to be conserved

(10mks)

36. (a) What is metamorphosis. (2mks)

(b) Describe the life cycle of anopheles mosquitoes (7mks)

(c) (i) Explain how man reduce deaths caused by malaria (4mks)

(ii) State the affect of malaria to man (2mks)

***END***