

WAKISSHA JOINT MOCK EXAMINATIONS
MARKING GUIDE
Uganda Certificate of Education
UCE August 2017
BIOLOGY 553/1



1. D	11. D	21. D
2. B	12. C	22. A
3. C	13. B	23. C
4. B	14. C	24. C
5. B	15. B	25. A
6. D	16. B	26. D
7. B	17. C	27. D
8. C	18. C	28. B
9. C	19. D	29. B
10. B	20. C	30. C

GUIDE QUESTION 31

31. (a) As on the graph.
- (b) To determine the rate of capillarity for soil samples A and B;
- (c) (i) In the 1st two hours; water reached a higher level in soil sample A than B;
because soil sample A has bigger particles than B; hence soil A is more porous/has more air spaces than B; which enables water to rise faster; in soil sample A than B;
- Any3 1mk@**
03 marks
- (ii) Between 2 and 8 hours water reached a higher level in soil sample B than A; because soil sample B has smaller particles than A;
providing narrow /small spaces; increasing rate of capillarity;
- (04 marks)**
- (d) Soil sample B; because it is not easily leached; since its less porous;
- (02 marks)**
- (e) By flocculation /Addition of lime; which causes the particles of soil B into crumps, enhancing drainage and aeration;
- (02 marks)**
- (f) - Porosity
- High Bulky density;
- (02 marks)**
32. (a) (i) Chambers:
1. Stomach;
2. Duodenum;
3. Ileum;
- ½ mk@ (01½ marks)**
- (ii) Structures:
P: Gullet/Oesophagus;
Q: Bile duct;
- (01½ marks)**
- R: Pancreatic duct;
- (b) (i) Gall bladder:
– Stores bile; **Rej.** Produces bile

Accept
Rej.

releases bile
Secretes bile.

1mk@ (01 mark)

- (ii) Pancreas:
– Secretes / releases / produces pancreatic juice; **(01 mark)**

- (c) Blockage of X prevents flow / passage of bile to the Duodenum / part / chamber 2; chemical digestion of foods is affected; due to absence of enzymes responsible / trypsin / pancreatic lipase / pancreatic amylase; and bile that would neutralise the acidic food;
1mk@ (04 marks)

- (d) Contains/ possess digestive enzymes for catalysing breakdown of food;
½mk@ (01 mark)

TOTAL = 10 MARKS

33. (a) (i) Transpiration; **(½ mark)**
(ii) To maintain other factors constant; **(01 mark)**
- (b) To prevent evaporation of water from the soil; **(01 mark)**
- (c) (i) **Plant A:** Moderate amount of water was lost; due to warm air easing moderate evaporation of water and light caused wider stomatal opening;
(02 marks)
- (ii) **Plant B:** Little water was lost; due to saturation of water vapour around the plant and narrow stomata opening due to darkness;
(02 marks)
- (iii) **Plant C:** Much water was lost; due to windy air which blows away water vapour around the plant and light causing wider stomatal opening;
(02 marks)
- (d) Its mass will decrease slightly; because stomata were covered with Vaseline; and only little water is lost through lenticels; of the stem.
(1½ marks)

34. (a) During gaseous exchange Oxygen gas; at a higher concentration in alveolar air; diffuses; across the thin wall of the alveolus; into red blood cells; in the blood capillaries; surrounding the alveolus. **(1mk@)**
Meanwhile, carbon dioxide gas; at a higher concentration in red blood cells; in the blood capillary diffuses; across the thin wall of the alveolus into the alveolar air.

Maximum 07 (07 marks)

- (b) **Explaining the difference in composition of inspired and expired air in humans.**
- Oxygen in inspired air is more / higher than oxygen in expired air; because some of the oxygen in inspired air diffuse into red blood cells and are used up during respiration / metabolism; **1mk@ (02 marks)**

- Carbondioxide in expired air is more /higher than in inspired air; because more carbon dioxide produced during cell respiration is added to the atmospheric carbon dioxide in alveolar air increasing the amount; **(02 marks)**
- Inspired air has less / lower moisture content than expired air; in order to lose excess water in form of water vapour in expired air; **(02 marks)**
- Expired air is more warm / has higher heat content than inspired air in order to lose excess heat from the body during expiration; **(02 marks)**

TOTAL = 15 MARKS

35.

(a) **Explaining effects of air pollutant on living things:**

Pollutants	Effects
(i) Dust;	- when inhaled causes cough; also impairs vision; - Block stomata in leaves reducing rate of photosynthesis;
(ii) Smoke;	- when inhaled causes respiratory complication; by affecting transport of oxygen;
(iii) Lead;	- Lead is poisonous and kills animals;
(iv) Carbon monoxide;	- Prevents combination of Oxygen with Haemoglobin by combining with it forming carboxyhaemoglobin;
(v) Sulphur-dioxide;	- reacts with rain water forming sulphurous acid which destroys crops;
(vi) C.FCs and aerosols	- cause global warming which affects animals due to increase in temperature;

Maximum 10

10 marks

(b)

- Tarmac murram roads; to prevent dust
- Educate the mass / people;
- Encourage use of electricity / solar energy than wood fuel;.....CO
- Encourage the use of electric trains than automobiles / vehicles that burn fossils fuels; **05 marks**

TOTAL = 15MARKS

36. (a) Homeostasis is the maintenance of internal environment; under constant Conditions; **1mk@ 02 marks**
- (b) (i) The liver performs many metabolic reactions; / it is metabolic centre and Generates a lot / large amount of heat; which is distributed by blood to all other body parts; and is used to maintain a constant body temperature;
1mk@ 04 marks
- (ii) **Hairs;**
When it is hot, the erector-pili muscles relax; the hair lies flat on the skin surface to reduce insulation; and encourage heat loss;
when it is cold, the erector-pili muscles contract; causing the hair stand and trap warm air which insulates the body keeping it warm;
Sweat glands;
Sweat glands release more sweat when it is hot; the sweat evaporates taking latent heat of vapourisation; from the body hence cooling it;
When it is cold, sweat glands release less sweat; there is less evaporation and consequently less heat loss; conserving heat.
Blood vessels;
When it is hot, blood vessels dilate (vasodilation); more blood flows near the skin surface; increasing heat loss by radiation; convection causing cooling.
When it is cold, the blood vessels constrict (vasoconstriction); less blood flow near skin surface; reducing heat loss by radiation / convection;
Subcutaneous fat; provide insulation against heat loss;
@ ½ mark max 07
- (c)
Brain (Hypothalamus);
Pancreas;
Lungs;
Kidney;
Any 02 marks
37. (a) Geotropism is plant growth response to gravity; while phototropism is plant growth response to unilateral light;
02 marks
01 mark@

(b) **An experiment to show the effect of gravity on a bean root;**

01 mark

Apparatus / materials.

Bean seedlings; moist cotton wool / blotting paper; plasticine petridishes; cellotape.

02 marks

Procedure,

Select bean seedling with straight radicles; and place them in moist cotton wool / blotting paper; put them in a petri-dish; arrange the seedlings so that the radicle of one points upwards / horizontally; and the other downwards; cover the petri-dish with the lid and secure it with a cello tape; Fix the petri-dishes in the upright position using plasticine / cello tape; leave the experiment to stand for 3 days; in a dark place to stop phototropism.

½ mark@ 04 marks

Observation,

Radicles which were pointing upwards / horizontally changed direction of growth and point downwards; while those pointing downwards continued to grow downwards;

1 mark@ 02 marks

Conclusion

Bean radicles are positively geotropic.

01 mark

(c) Positive phototropism of shoots / stems leads to absorption of sunlight energy for photosynthesis;

Positive geotropism of roots leads to absorption of water by roots;

Negative phototropism by roots / radicles makes them to grow away from sunlight preventing drying up of roots / root hairs;

½ mark@ 03 marks

TOTAL =15 MARKS

END