

MIDTERM I EXAMS 2017
S.4 BIOLOGY
2HOURS 30MINUTES

INSTRUCTIONS:

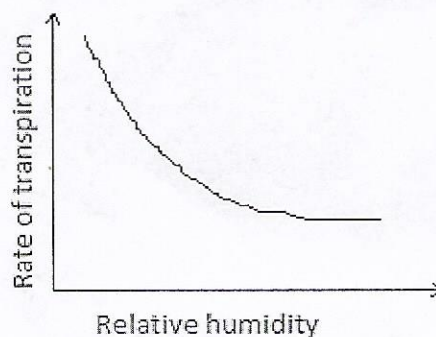
- Answer **all** questions in section **A** and **B**, Plus **two** Questions in section **C**
- Write the answers to section **A** in **answer sheet** provided and answer to section **C** in the answer booklet provided.

ANSWER SHEET FOR SECTION A

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

SECTION A (30marks)

1. Which one of the following digestive processes is catalysed by salivary amylase?
 - A. Maltose to Glucose
 - B. Sucrose to glucose and fructose
 - C. Starch to maltose
 - D. Lactose to galactose and Glucose
2. The figure bellow shows the effect of relative humidity on transpiration rate:



From the figure, transpiration rate:

- A. Increase with decreased relative humidity
- B. Increase with increase related humidity
- C. Decrease with increased relative humidity
- D. Remains constant with increased relative humidity

3. Which one of the following classes has the highest number of species?
 - A. Cruastacea
 - B. Insecta
 - C. Arachnida
 - D. Myriapode

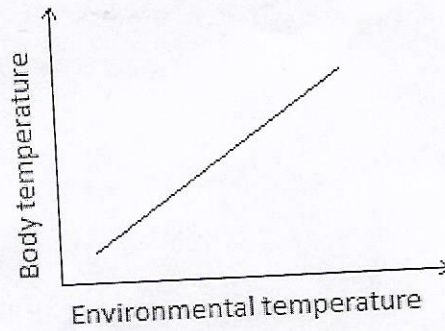
4. Which of the following substances is not contained in Glomerular filtrate in the Mammalian Kidney?
 - A. Urea
 - B. Plasma proteins
 - C. Glucose
 - D. Mineral salts

5. Which one of the following is an adaptation of the leaf for transportation of manufactured food?
 - A. Numerous chloroplast
 - B. Numerous stomata
 - C. Branching network of veins
 - D. Large air spaces in the spongy mesophyll

6. Clay soil has a high water retention capacity because it
 - A. has small air spaces
 - B. contains little mount of humus
 - C. Is sticky when wet
 - D. Has good capillary attraction

7. Which of the following is the correct order of cell organization?
 - A. Cell → organ → tissue → System
 - B. Tissue → cell → organ → system
 - C. Organ cell tissue system
 - D. Cell → tissue → organ → system

8. The figure below shows the changes in body temperature with environmental temperature in an animal



Which one of the following could be the animal represented?

- A. Bird
 - B. Human
 - C. Dog
 - D. Frog
9. Which one of the following relationships is an example of mutualism?
- A. Tapeworm living in a human gut
 - B. Bacteria living in the gut of a dog
 - C. Ticks living on skin of a dog
 - D. Plasmodium living in human blood
10. The following are responses to cold conditions in mammal?
- | | |
|---------------------|---------------------|
| 1. Vasoconstriction | 2. Hair standing up |
| 3. Shivering | 4. Increase |
- Which of these both reduce heat loss?
- A. 1 and 2
 - B. 1 and 4
 - C. 2 and 3
 - D. 3 and 4
11. Which of the following are respiratory surface of animals?
- A. Spiracles
 - B. Trachioles
 - C. Gill filament
 - D. Alveoli
12. Which one of the following types of fruits is a pineapple?
- A. Drupe
 - B. Multiple fruit
 - C. Indehiscent fruit
 - D. Berry

13. The following Conditions are all a result of deficiency of the vitamin B group except
- Night blindness
 - Beriberi
 - Pellagra
 - Pernicious anaemia
14. In plants, large surface area to volume ratio for gaseous exchange is achieved by
- Presence of numerous stomata on leaves
 - Flatness of air spaces in the Mesophyll
 - Presence of air spaces in the mesophyll
 - Presence of lenticels
15. In the mammalian head, the thick muscular walls of left ventricle are vital for.
- Resisting pressure of the blood coming into the ventricles
 - Maintaining the shape of the heart
 - Producing enough pressure to pump blood to all parts of the body
 - Resisting back flow of blood from the aorta
16. Which one of the following sets of events occurs in a person when feeling cold?
- Blood capillaries constrict, hair rises and metabolic rate increases
 - Hair lowers, blood capillaries dilate and metabolic rate decreases
 - Metabolic rate increases, blood capillaries dilate and hair lowers
 - Metabolic rate decreases, blood capillaries constrict and hair rises
17. Which one of the following equations summarises the process of fermentation?
- Glucose $\longrightarrow$ Ethanol + Carbondioxide + water
 - Glucose $\longrightarrow$ Lactic acid + energy + water
 - Glucose $\longrightarrow$ Ethanol + Carbondioxide + Energy
 - Glucose $\longrightarrow$ Lactic acid + water + carbondioxide
18. Which of the following is the mode of feeding of a mould?
- Holozoic
 - Autotrophic
 - Saprophytic
 - Parasitic
19. Which one of the following is a correct route taken by carbondioxide from body cells of an insect to the atmosphere?
- Trachea $\longrightarrow$ Tracheoles $\longrightarrow$ spiracles
 - Spiracles $\longrightarrow$ trachea $\longrightarrow$ tracheoles
 - Tracheoles $\longrightarrow$ trachea $\longrightarrow$ spiracles
 - Spiracles $\longrightarrow$ tracheoles $\longrightarrow$ trachea

20. In an experiment to find the proportion of air in soil, the following results were obtained.

A Volume of soil = $x\text{cm}^3$

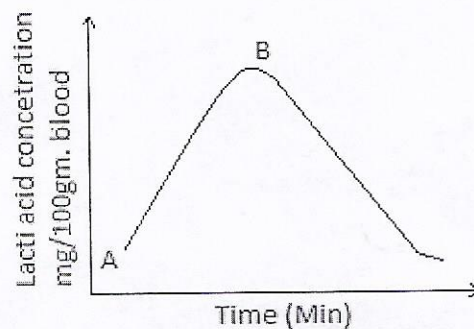
Volume of water added to soil = 200cm^3

Volume of soil plus water after stirring = $y\text{cm}^3$

Which one of the following expression gives the volume of air in the soil sample?

- A. $y - x\text{cm}^3$
 - B. $(x + 200) - y\text{cm}^3$
 - C. $y - 200\text{cm}^3$
 - D. $y - (x + 200)\text{cm}^3$
21. Which one of the following enzymes acts best at low PH
- A. Pepsin
 - B. Trypsin
 - C. Peptidase
 - D. Lipase

22. The figure below shows the changes in the lactic acid concentration in blood during and after exercise



The correct explanation for what is occurring between point A and B is that

- A. Breathing rate has increases
 - B. Blood flow to the muscles has increased
 - C. Oxygen supply to the muscles is less than the demand
 - D. Oxygen supply to the muscles is in excess
23. The part of the microscope used to make the image clear is the
- A. Objective lens
 - B. Eye piece
 - C. Coarse adjustment
 - D. Fine adjustment

24. Which one of the following correctly describe population density?
The number of organisms
- A. In a specified area
 - B. Of a particular species in a specified area
 - C. Living either on land or water
 - D. Which can interbreed and produce viable offspring
25. The bacteria which convert ammonia into nitrates are called
- A. Putrefying bacterial
 - B. Nitrifying bacteria
 - C. Denitrifying bacteria
 - D. Nitrogen fixing bacteria
26. Which one of the following part of the kidney carries out the excretory function?
- A. Cortex
 - B. Medulla
 - C. Pelvis
 - D. Nephron
27. Which one of the following diseases is not prevented by washing of hands
- A. Cholera
 - B. Typhoid
 - C. Tape worm infection
 - D. Dysentery
28. Which one of the following blood vessels has the highest level of nutrients?
- A. Mesenteric artery
 - B. Hepatic Portal vein
 - C. Renal artery
 - D. Hepatic vein
29. Which one of the following organs excretes urea?
- A. Bladder
 - B. Skin
 - C. Liver
 - D. Lungs
30. Which one of the following pairs of organs is important in the digestion of fats
- A. Stomach and liver
 - B. Pancreas and stomach
 - C. Liver and pancreas
 - D. Stomach and month

SECTION B (40 marks)

31. The table below shows the changes in mass of starch and protein in a typical pea seed during the first 20 days of germination.

Food substance in seed	Day of germination					20
	0	4	8	12	16	
Starch (mg)	60	56	32	8	5	4
Protein (mg)	28	21	11	5	3	2

- (a) Using the same axes, draw two graphs to show the change in mass of starch and protein during the first 20 days of germination of the seed, in the graph paper provided. (08 marks)

- (b) How are the changes in mass of starch and protein?

(i) Similar

(02 marks)

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(ii) Difference

(02 marks)

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- (c) Explain why the mass of starch and proteins change in the germinating seed. In each case state the reactions that result into the changes. (04 marks)

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- (d) Suggest two ways in which the products from each starch and proteins may be used in the germinating of seed

(i) Starch

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(i) Protein

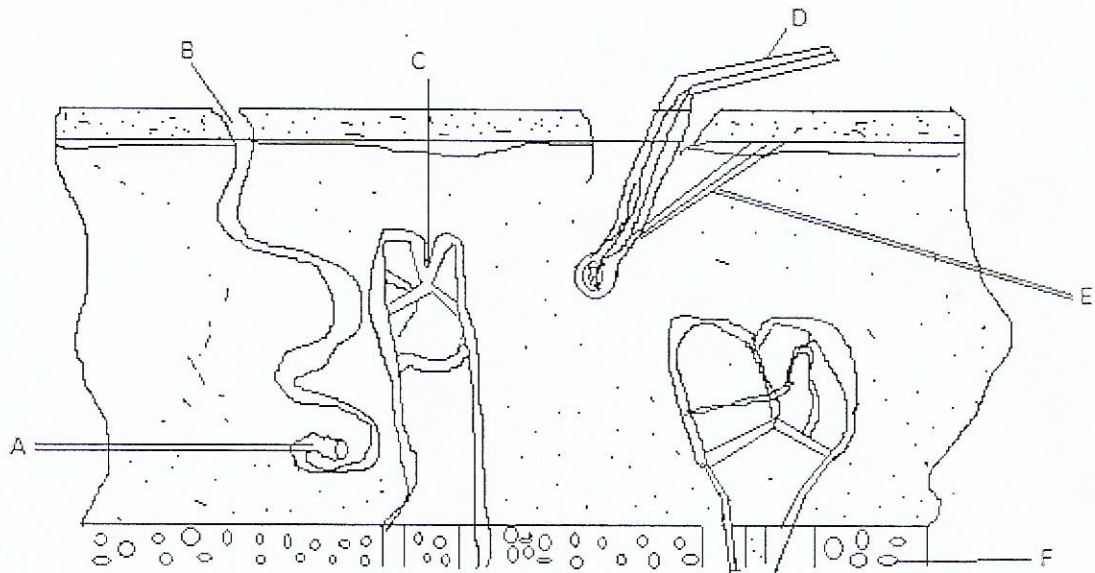
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32. The figure below shows a longitudinal section of a human skin



(i) Name the part labeled A to F

A.....

B.....

C.....

D.....

E.....

F.....

- (b) Give the function of the following parts (07 marks)

A.....
.....
B.....
.....
D.....
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F.....
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- (c) Using one observable feature on the diagram, suggest the type of temperature condition the skin is responding to. State the observable feature and the reason for your answer.

(i) Temperature condition

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(ii) Observable feature

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Reason:

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.....

33. What do you understand by the following terms?

(a) Habitat.....
.....
.....

(b) Ecosystem.....
.....
.....

(c) There are four possible trophic levels that can exist in a food chain state them below

(i).....
(ii).....
(iii).....

- (iv).....
- (d) Give an example of a food chain consisting of four levels of organisms found in a grass land

- (e) Construct a diagram of a food web which may exist in a fresh water lake in Uganda comprising of the following organisms
 Tadpole, Green alga, Heron, Saprophytic bacterial, small fish big fish and mosquitoes larva

SECTION C (30 marks)

Attempt only **two** questions from this section.

34. (a) Why do flowering plants possess simpler excretory organs than those found in mammals. (03 marks)
 (b) Describe how the mammalian kidney forms urine. (10 marks)
 (c) What part's played by the mammalian skin in excretion? (02 marks)
35. Explain how a dicotyloedonous leaf is adapted for the process of photosynthesis. (15 marks)
36. (a) Explain the advantages of ectothermy and Endothermy . (09 marks)
 (b) A shrew is the smallest animal in Africa. It eats a lot of food which is mainly insects rich in fats.
 Explain why the shrew eats
 (i) A lot of food (03 marks)
 (ii) Mainly insectors rich in fats (03 marks)

END