



Dr. Blossa Science

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Biology

PAPER 1

Exam 18

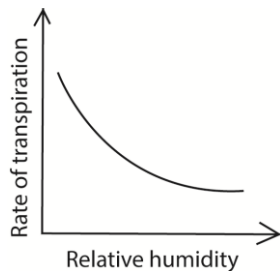
2 hours

Instructions

Answer all questions in section A and B and two questions from section C

Section A (30 marks)

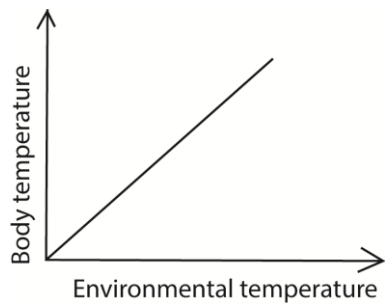
1. Which of the following processes is catalyzed by salivary amylase?
 - A. Maltose to glucose
 - B. Sucrose to glucose and fructose
 - C. Starch to maltose
 - D. Lactose to galactose and glucose
2. The figure below shows the effect of relative humidity on transpiration rate



From the figure, transpiration rate

- A. Increase with decreased relative humidity
- B. Increase with increased relative humidity
- C. Is not affected by changes in relative humidity

- D. All the above
3. Which one of the following classes has the highest number of species
- A. Crustacea
 - B. Insecta
 - C. Arachnida
 - D. Myriapoda
4. Which of the following substances is not contained in glomerular filtrate in 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 chloroplasts
 - B. Numerous stomata
 - C. Branching network of veins
 - D. Large air space in spongy mesophyll
6. Clay soil has a high water retention capacity because it
- A. Has small air spaces
 - B. Contains little amounts of humus
 - C. It 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 relationship is example of mutualism?

- A. Tapeworm living in a human gut
- B. Bacteria living in the gut of a cow
- C. Tick living on skin of a dog
- D. Plasmodium living in human blood

10. The following are responses to cold conditions in mammal?

- (i) vasoconstriction (ii) hair standing up (iii) shivering (iv) increase in metabolic rate

Which of these both reduce heat loss

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

11. Which of the following is not a respiratory surface?

- A. Spiracle
- B. Tracheoles
- 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 are all a result of deficiency of vitamin B group except
- A. Night blindness
 - B. Beriberi
 - C. Pellagra
 - D. Perniciuos anemima
14. In plants , large surface area to volume ratio for gaseous exchange is achieved by
- A. Presence of numerous stomata on th leaves
 - B. Platness of air spaces in the mesophyll
 - C. Presence of air spaces in the mesophyll
 - D. Presence of lenticels
15. In the mammalian heart, the thick muscular walls of left ventricles are vital for
- A. Resisting pressure of the blood coming into the ventricles
 - B. Maintaining the shape of the heart
 - C. Producing enough pressure to pump blood to all parts of the body
 - D. Resisting back flow of blood from the aorta
16. Which one of the following sets of events occurs in a person when feeling cold?
- A. Blood capillaries constrict, hair rises and metabolic rate increase
 - B. Hair lowers, blood capillaries dilate and metabolic rate decreases
 - C. Metabolic rate increases, blood capillaries dilate and hair lowers
 - D. Metabolic rate decreases, blood capillaries constrict and hair rires
17. Which one of the following equations summarises the process of fermentation?
- A. $\text{Glucose} \rightarrow \text{ethanol} + \text{carbon dioxide} + \text{water}$
 - B. $\text{Glucose} \rightarrow \text{lactic acid} + \text{energy} + \text{water}$
 - C. $\text{Glucose} \rightarrow \text{ethanol} + \text{carbon dioxide} + \text{energy}$
 - D. $\text{Glucose} \rightarrow \text{lactic acid} + \text{water} + \text{carbon dioxide}$
18. Which of the following is the mode of feeding of a mould?
- A. Holozoic
 - B. Autotrophic
 - C. Saprophytic
 - D. parasitice
19. Which of the following is a correct rout taken by carbon dioxide from cells of an insect to the atmosphere?
- A. Trachea \rightarrow Tracheoles \rightarrow spiracle

- B. Spiracle → trachea → tracheoles
- C. Tracheoles → trachea → spiracles
- D. Spiracles → tracheoles → trachea

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

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

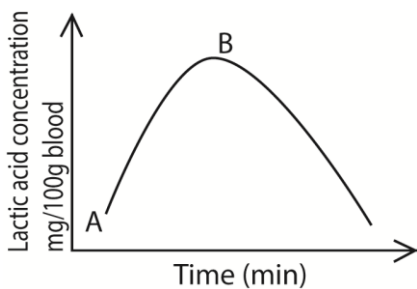
Volume of water added to the soil 200cm^3

Vaolume of water + soil after stirring = $y\text{cm}^3$

Which 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 at low pH?
- A. Pepsin
 - B. Trypsin
 - C. Peptidase
 - D. Lipase

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



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

- A. Breathing rate increase
 - B. Blood flow to the muscle has increased
 - C. Oxygen supply to the muscle is less than the demand
 - D. Oxygen supply to the muscle 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 specified area
 - B. Of a particular species in a specified area
 - C. Which can interbreed and produce viable offspring
25. The bacteria which convert ammonia into nitrates are called
- A. Putrefying bacteria
 - B. Nitrifying bacteria
 - C. Denitrifying bacteria
 - D. Nitrogen fixing bacteria
26. Which one of the following parts of the kidney carries out 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. Tapeworms infections
 - D. Dysentery
28. Which one of the following blood vessels has highest levels 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 digestion of fats

- A. Stomach and liver
- B. Pancreas and stomach
- C. Liver and pancreas
- D. Stomach and mouth

SECTION B (40 MARKS)

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

Food substance in seed	Day of germination					
	0	4	8	12	16	20
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 change in mass of starch and proteins during the first 20 days of germination of the seeds on the graph paper provided (08 marks)

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

(i) **Similar** (02marks)

.....

(ii) **Different** (02marks)

.....

(c) Explain why the mass of starch and proteins in the germinating seed as described in (b). In each case state the reactions that results into the changes (04marks)

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

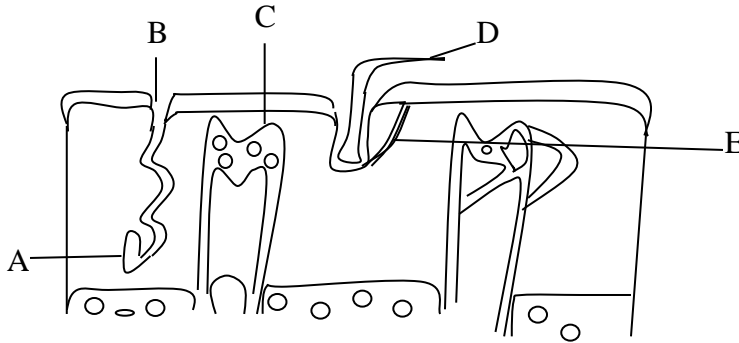
(i) Starch

.....

(ii) Proteins

.....

32. Figure below shows a longitudinal section of human skin



(a) (i) Name the parts A to E

A

B.....

C

D

E

(b) State the function of each of the parts labelled A, B, D and E

A

B.....

C

D

E

(c) Using ant one observable feature on the diagram, suggest the type of temperature condition the skin is responding to. State the observable feature as a reason for your answer
Temperature condition

Observable features:

.....
.....
.....

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 grassland

.....
.....
.....

(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 bacteria, small fish and mosquito larva

SECTION C (30marks)

34. (a) Why do flowering plants possess simpler excretory organs than those found in mammals (03marks)
- (b) Describe how the mammalian kidney forms urine (10marks)
- (c) What part is played by the mammalian skin in excretion? (02marks)
35. Explain how a dicotyledonous 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 mammal 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 insects rich in fats (03 marks)

END