Name.....Stream.....

DEPARTMENT OF BIOLOGY

S.2 BIOLOGY THEORY

TIME: 2 HOURS

INSTRUCTIONS

- Attempt all questions in section A, B and any two from C.
- Put the correct objective in the space provided below for section A and fill in the spaces provided for section B and use booklets given for C.

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

1. A fruit with several sutures along which it splits when ripe is called?
   A. Capsule B. Berry C. Drope D. Legume

2. After manufacturing food, plants transports through the...
   B. Pith B. cortex C. phloem D. xylem

3. External digestion of food is a characteristics of
   C. House fly B. mucor C. paramecium D. amoeba

4. Which of the following features differentiate a house fly from a spider?
   A. Number of body divisions C. jointed limbs
   B. Segmented body D. possession of exoskeleton

5. Which of the following cell structures is possessed by both animal and plant cells
   A. Chloroplast C. flagellum
   B. Cell wall D. cell membrane
6. Organism that benefit from one another are examples of a relationship known as;

A. Parasitism B. Mutualism C. Commensalism D. Predation

7. The area of the leaf where most of photosynthesis takes place is.
   A. Mesophyll layer C. upper epidermis
   B. Epidermis D. Palisade layer

8. When 60cm3 of water was added to 100cm3 of soil, the volume of the mixture after stirring was 140cm3. What was the percentage
   A. 20% B. 40% C. 60% D. 80%

9. Which of the following is an arachnid?
   A. Crab B. Hydra C. Scorpion D. Cockroach

10. Which of the following is an example of a
    A. Straw berry C. Orange
    B. Ginger D. Bulb

11. Paramecium moves by means of ?
    A. Coelom B. Flagella C. Cilia D. Pseudopodia

12. Dichogamy is an attempt by plants to a adopt for
    A. Self pollination C. Cross pollination
    B. Wind pollination D. Insect pollination

13. The major function of light in the process of photosynthesis is
    A. Producing oxygen
    B. Splitting water molecule
    C. Providing heat
    D. Opening the leaf

14. During anaerobic respiration;
    A. Glucose is completely broken down
    B. Oxygen is used
    C. Glucose is partially broken down
    D. Too much energy is releases

15. Which of the following is not true about flowering plants:-
    A. Sepals and petals together form a pareinth
    B. Sepals from calyx
    C. Petals form corolla

D. Carpals form Androecia

16. Which of the following represent the correct order of food treatment in the gut of a mammal
    A. Ingestion, assimilation, digestion and absorption
    B. Digestion, ingestion, assimilation and absorption
    C. Ingestion, digestion, absorption and assimilation
    D. Ingestion, digestion, assimilation and absorption

17. Osmosis can best be defined as;
    A. Movement of water molecules from a solution of low concentration to a solution of high concentration
    B. Movement of water molecules from a solution of high concentration to an solution of low concentration across a semi permeable membrane
    C. Movement of molecules from one region to another
    D. Movement of water molecules from a solution of low concentration to a solution of high concentration across a semi permeable membrane.

18. Where does chemical digestion of protein start from in human
    A. Stomach B. Ileum C. Mouth D. colon

19. Which of the following insects undergoes complete metamorphosis?
    A. Cockroach B. House fly C. Locust D. Grass hopper

20. The type of weathering characterized by combination of rainwater and CO^2 to form carbonic acid is?
    A. Biological weathering C. Chemical weathering
    B. Natural weathering D. Physical weathering

21. Protein molecules are made up of small simple molecule known as..
    A. Fatty acids B. Peptides C. maltose D. Amino acids

22. Which of the following consists of the least number of organisms
    A. Phylum B. Order C. Kingdom D. Class

23. The following are poilikotherms except?
    A. Snake B. Toad C. Hen D. Lizard.

24. Which of the following is a characteristics of clay soil.

A. High drainage
B. Good aeration
C. Heavy to cultivate
D. Low water retention

25. The diagram below show a leaf

The leaf type is;
A. Compound digitate
B. Compound trifoliate
C. Compound paripinnate
D. Compound imparipinnate

26. A fruit formed from one flower in which the pistil consist of several free carpels is called?
A. Multiple fruit
B. Aggregate fruit
C. simple fruit
D. drupes

27. When testing for non-reducing sugars, sodium hydroxides are used to...
A. Hydrolyze the solution
B. Confirm the reducing sugars
C. Neutralize the acid in the solution
D. Changing the colour of the solution

28. During fertilization in flower, the male nucleus fuses with the egg nucleus to form
A. An embryo
B. An endosperm
C. a zygote
D. a fruit

29. If the magnification of the eye piece lens of a micro-scope is x10 and the total magnification id x400. The magnification of the objective lens is ?
A. X40 B. x390 C. x410 D. x100

30. Delayed blood clotting is a deficiency resulting from a lack of?
A. Vitamin A B. Vitamin B C. Vitamin K D. Vitamin D

SECTION B

31. S.2 students carried out an experiment to determine the percentage of air of soil samples P, Q and R obtained from the three plots in the just started school farm. The results obtained are shown in the table below. Study it and answer the questions that follow.

Type of soil	Volume of soil (cm^3)	Volume of water added (cm^3)	Volume of soil and water after stirring (cm^3)
P	50	100	125
Q	100	250	325
R	100	180	200

(a) Calculate the percentage of air in each sample

Soil type P	Soil type Q	Soil type R

(b) Which of these types P, Q and R would drain best? (1mk)

.....

(i) Give a reason for your answer above. (2mks)

.....

.....

(ii) Which one of these soil types would be most suitable for crop growing? (1mk)

.....

(iii) Explain your answer in (b) (ii) above (2mks)

.....

....

(iv) Suggest the identities of soil types P, Q and R

P..... Q..... R.....

(c) State the characteristics of soil sample Q. (5mks)

.....

.....

.....

.....

.....

32. The diagram below shows the structure of a villus

(a) Name the parts marked A, B, C and D. (2mks)

A.....

B.....

C.....

(b) What food substances enter; (2mks)

(i) A.....

(ii) B.....

(c) (i) State four factors which make a villus an effective absorbing structure. (4mks)

.....

.....

.....

.....

.....

.....

.....

(ii)State two nutrients there are absorbed in the gut before reaching the villus. (2mks)

.....

.....

.....

33. The figure below shows a cross section of part of a plant.

(a) Name the part lebelled 1 to 5. (5mks)

1.....
2.....
3.....
4.....
5.....

(b) Giving a reason, state the part of the plant from which the section has taken. (2mks)

Part of plant.....
Reason.....
.....

(c) State the functions of parts lebelled 3, 4 and 5

3.....
4.....
5.....

SECTION C

34. (a) Describe the life cycle of a housefly. (9mks)
(b) What is the economic importance of a housefly? (3mks)
How would you minimize the spread of houseflies in your home? (3mks)

35. (a) Define cross pollination. (2mks)
(b) How are plants naturally modified to prevent self pollination. (5mks)
(c) List the characteristics of insect pollinated flowers. (8mks)

36. (a) Define weathering. (2mks)
(b) Explain any four importance of humus. (4mks)
(c) During an experiment on soil, a student of S.2 was investigating about a given soil sample and obtains the following results
Mass of crucible + soil before heating = 25m
Mass of crucible alone = 10g
Mass of crucible + soil after heating = 20g
(i) Calculate the amount of water in soil sample. (2mks)
(ii) Calculate the mass of soil used. (2mks)
(iii) Determine the percentage of water in the soil sample. (3mks)
(d) Give the importance of humus in soil. (2mks)

37. (a) Define photosynthesis. (2mks)
(b) Describe an experiment to test for starch in a leaf. (15mks)

END