B O T III EXAMS 2013
BIOLOGY S.4
TIME 2 Hours 30 Minutes

NAME…….
Instructions: Attempt all questions in section A and B plus ONE in section C.

SECTION A

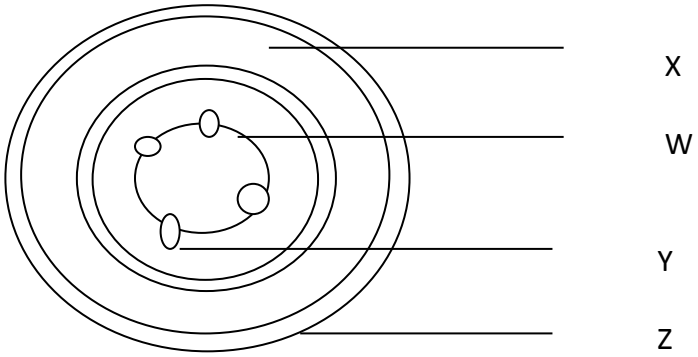
1	11	21
2	12	22
3	13	23
4	14	24
5	15	25
6	16	26
7	17	27
8	18	28
9	19	29
10	20	30

1. The essential parts of a flower are;
   A. Androecium and stamen
   B. Pistils and carpels
   C. Calyx and corolla
   D. Androecium and gynoecium

2. The cellular components of blood are;
   A. Plasma, leucocytes and erythrocytes.
   B. Leucocytes, thrombocytes and Erythrocytes.
   C. Erythrocytes,platelets,and Thrombocytes
   D. Thrombocytes,fibrin and thrombin

3. The type of placentation in which seeds are situated on the inner margin of the fruit wall is known as;
   A. Marginal
   B. Axile
   C. Basal
   D. parietal

4. Study the diagram and answer the questions



Part X is,

A. Phloem
B. Cortex
C. Endodermis
D. Pith

5. Which part is important in the transportation of water and mineral salts?
   A. W
   B. X
   C. Y
   D. Z

6. The function of part W is to;
   A. Transport manufactured food
   B. Promote secondary growth
   C. Protect the vascular bundles
   D. Store manufactured food.

7. The shrinkage of animal cells when placed in a hypertonic solution is called;
   A. Crenation
   B. haemolysis
   C. plasmolysis
   D. turgidity

8. Which one of the following parts of the tooth contains living tissue?
   A. Cement
   B. Pulp cavity
   C. Enamel
   D. Dentine

9. Which of the following increases the amount of nitrogen in the atmosphere?
   A. Excretion
   B. Action of fungi on dead organic matter
   C. Action of nitrifying bacteria
   D. Action of denitrifying bacteria.

10. In which two parts of the Alimentary canal is starch digested?
    A. Small intestines mouth
    B. Mouth and duodenum
    C. Duodenum and stomach
    D. Mouth and stomach

11. Which one of the following is a modified root?
    A. Irish potato tuber
    B. Rhizome
    B. Cassava tuber
    D. Corm

12. Which of the following is not a function of blood?
    A. Regulation of sugar level in the body
    B. Healing of damaged parts of the body.
    C. Regulation of body temperature
    D. Transportation of wastes.

13. Aerobic respiration is more efficient than Anaerobic;
    A. Uses more oxygen
    B. Yields lactic acid
    C. Uses less oxygen
    D. Yields more energy

14. The surfaces for gaseous exchange in fish are;
    A. Gill bars
    C. Gill filament
    B. Gill rakers
    D. gills

15. The following happen during inspiration except;
    A. External intercostal muscles contract
    B. External intercostals muscles relax
    C. Muscles of the diaphragm contract
    D. Volume of thoracic cavity increases

16. Which of the following food substances not changed by the gut enzyme?
    A. Lipids and vitamins
    B. Minerals and vitamins
    C. Minerals and disaccharides
    D. Lipids and lactose

17. Which of the following vitamins is deficient in a person whose gums bleed?
    A. Vitamin C
    C. Vitamin B_2
    B. Vitamin E
    D. Vitamin K

18. Which gas is likely to be evolved from sub merged aquatic plant placed in bright sunlight?
    A. Carbon dioxide
    C. Hydrogen
    B. Oxygen
    D. Nitrogen

19. Which gas of the following has the least energy content in a food chain?
    A. Producer
    C. Tertiary consumer
    B. Secondary consumer
    D. primary consumer.

20. The following results were obtained from an experiment done to determine the percentage of air in a sample of soil.
    Volume of water used = $10cm^3$
    Volume of soil + water = $40cm^3$
    Volume of soil + water after stirring = $37cm^3$
    From the above results, the percentage of air in the soil is
    A. 7.5 B. 8.1 C. 10 D 23.3

21. The chisel shaped structure of incisors is suitable for
    A. Tearing B. cutting C. chewing D. grinding

22. Fruits which split along lines of weakness to release their seeds are referred to as
    A. Dry dehiscent fruits C. berries
    B. Drupes D. dry indehiscent fruits.

23. Under what condition is lactic acid likely to accumulate in man?
    A. During sleep
    B. When engaged in a vigorous exercise
    C. After breathing in excess carbon dioxide
    D. After consuming a lot of malt

24. Blockage of bile duct would impair the digestion of
    A. Proteins C. Starch
    B. Cellulose D. fats.

25. A mosquito larva breathes by means of
    A. Spiracles C. segments
    B. Gills D. Nostrils

26. Which of the following is the best description of respiration?
    A. Breathing in of oxygen and breathing out carbon dioxide
    B. Absorption of oxygen in the alveoli
    C. Release of energy in the cell
    D. Gaseous exchange

27. Which of the following vertebrae contain vertebrarterial canals?
    A. Thoracic C. lumbar
    B. Cervical D. candal.

28. Which of the following is found at the knee and elbow joints?
    A. Gliding joint C. hinge joint
    B. Pivot joint D. ball and socket joint

29. The type of muscle situated in the walls of the heart is?
    A. Skeletal muscle
    B. Smooth muscle
    C. Striated muscle
    D. cardiac muscle

30. Which of the following feather type are distributed all over the body of a bird especially the neck and upper side of the body?
    A. Quill
    B. covert
    C. Filoplumes
    D. Down feather.

SECTION B.

31. In an investigation, two persons A and B drank the same amount of a glucose solution. Their blood sugar levels were determined immediately and thereafter at intervals of one hour for the next six hours. The results were as shown in the following table.

	Blood glucose level (mg/100ml)	
Time (hours)	**Person A**	**Person B**
0	90	120
1	220	360
2	160	370
3	100	380
4	90	240
5	90	200
6	90	160

a) Use same axes to present the information in the table graphically.
b) Give reasons(s) for each of the following observations.
i) Blood sugar level increased in person A between O and 1 hour

……

……

……

……

……

ii) The blood sugar level decreased in person A between 1 and 4 hours

……

……

……

……

c) From the graph, what is the normal blood sugar level for human being?

……..

d) Suggest a reason for the high sugar level in person B.

……

……

……

……..

e) How can the high blood sugar level in person B be controlled?

……

……

……

……

……..

f) What is the biological significance of maintaining a relatively constant sugar level in the human body?

……
……
……
……

SECTION C

32. (a) Define the following Ecological terms;

i) Population

ii) Community

iii) Ecological niche

iv) Ecosystem

(b) I) differentiate between a food chain and food web

ii) Given the following organisms, construct a food web to show the feeding relationships that exist: Grasshopper, cow Dog, bird Grass Toad, white ants.

iii) Explain the factors that affect population distribution in an ecosystem.

33. (a) What is an enzyme and state six characteristics of enzymes.

(b) Ssebina had a meal of posho and beans for lunch. Describe the process of digestion that the food passed through from the time it was put in the mouth until it was ready for absorption.

34. (a) What is a cell?
(b) Draw and name the structure of a plant cell.
(c) Give the functions of the following parts.
i) Cell membrane, ii) Nucleus iii) Cell vacuole.
(d) List the differences between a plant cell and animal cell (Use table).

35. a) Define the following terms

i. Complete dominance (01 mark)

ii. Co-dominance (01 mark)

b) When pollen grains from a red flowered plant were dusted on the flowers of the white flowered plant, a pink flowered plant was obtained.

i) Using suitable genetic symbols show how the pink flowered plant can to be obtained.

(07 marks)

ii) What will be the genotypes and phenotypes of a cross between a pink flowered plant and white flowered plant? Show your working.

(06 marks)

END