Name: ..... **Index No.** .....

School: .....**Date:** ..... **Candidate's Sign** .....

231/1
BIOLOGY
PAPER 1 (THEORY)
FORM 4
MARCH / APRIL 2013
TIME: 2HOURS

WESTERN ZONE JOINT EXAMINATION - 2013 (WEZOJE)

Kenya Certificate of Secondary Education (K.C.S.E)

INSTRUCTIONS TO CANDIDATES

1. Write your name, School and Index Number in the spaces provided above.
2. Sign and write the date of examination in spaces provided above.
3. Answer all the questions in the spaces provided after each question.

FOR EXAMINER'S USE ONLY

Question	Max. Score	Cand. Score
1 - 28	**80**	

This paper consists of 8 printed pages.
Candidates should check the question paper to ensure that all pages are printed as inticated an no questions are missing.

1. State **two** mechanisms by which small molecules such as glucose enter cells. (2marks)

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2. In an investigation a student collected two plants **A** and **B.** Plant A had hairy leaves and few stomata which were sunk into the epidermis. Leaves of plant B were broad and had many stomata on the upper surface only.

a) In which habitat would you find plant A (1mark)

Plant A: .....

Plant B: ..... (1mark)

3. How would one find out from a sample of urine whether a person is suffering from diabetes Mellitus? (3marks)

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4. Outline **three** roles of active transport in the human body. (3marks)

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5. a) State **two** processes that take place during interphase. (2marks)

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b) What is double fertilization (2marks)

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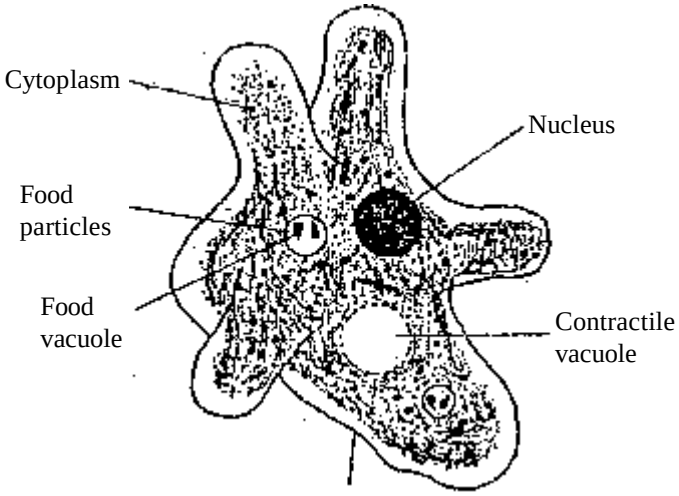
6. Below is a diagram of an organism.



a) i) Name the phylum to which the organism belong. (1mark)

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ii) Give a reason for your answer in (a)(i) above (1mark)

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7. What characteristics do gills of a fish and mouth cavity of a frog have in common that enable them to be efficient in gaseous exchange? (3marks)

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8. A process that occurs in plants is represented by the equation below.

$$C_6H_{12}O_6 \longrightarrow 2C_2H_5OH + 2CO_2 + \text{Energy.}$$

i) Name the process (1mark)

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ii) State the importance of this process (2marks)

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9. a) Account for the loss in dry weight of cotyledons in a germinating bean seed. (1mark)

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b) What is the effect of gibberellins on shoots of plants? (2marks)

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10. a) Name the material that strengthens xylem tissue. (1mark)

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b) Name the tissue that is removed when the bark of a dicotyledonaceous plant is ringed. (1mark)

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11. a) State **two** structural differences between ribonucleic acid (RNA) and deoxyribonucleic acid (DNA) (2marks)

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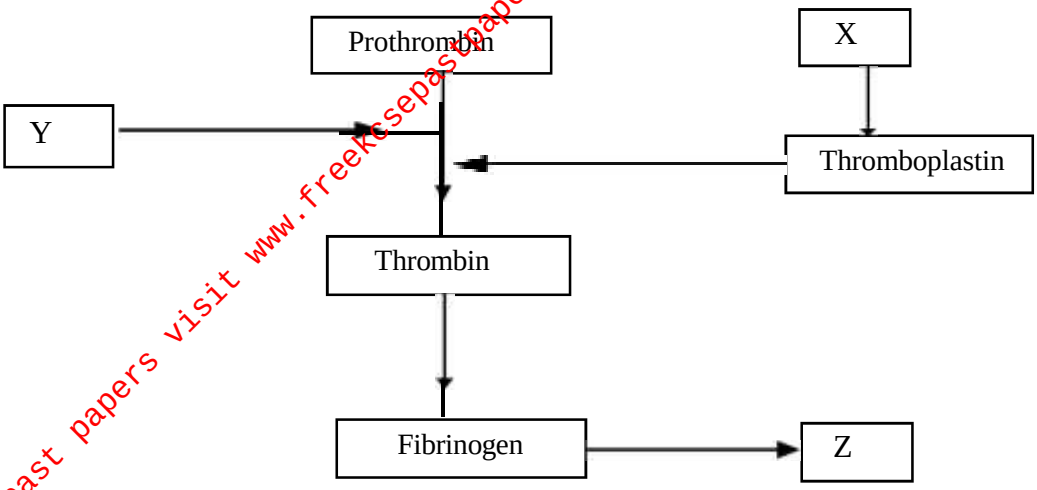
12. The chart below is a summary of the blood clothing mechanism in man.



Name

i) The blood cells represented by X (1mark)

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ii) The metal ion represented by Y (1mark)

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iii) The end product of the mechanism represented by Z (1mark)

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13. Bacteria, oxygen and water are added into a sewage treatment plant. Give the function of each of the items added. (3marks)

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14. Distinguish between divergent and convergent evolution (2marks)

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15. A person was walking a long a lonely dark path when suddenly he saw a gang of thieves approaching.

a) State the hormone that was secreted in his body and the gland from which the hormone was secreted. (2marks)

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b) State the effects of the hormone stated in (a) above on the person's

i) Circulatory system (1mark)

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ii) Breathing system (1mark)

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16. a) Explain the presence of proteins in urine (1mark)

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b) Explain what happens in humans when the concentration of glucose in the blood decreases below the normal level. (2marks)

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17. a) Briefly explain the absorption of fatty acids and glycerol in the ileum (1marrk)

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b) Explain the role of roughage in digestion. (1mark)

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18. State **three** possible ways in which food could be transported in the phloem (3marks)

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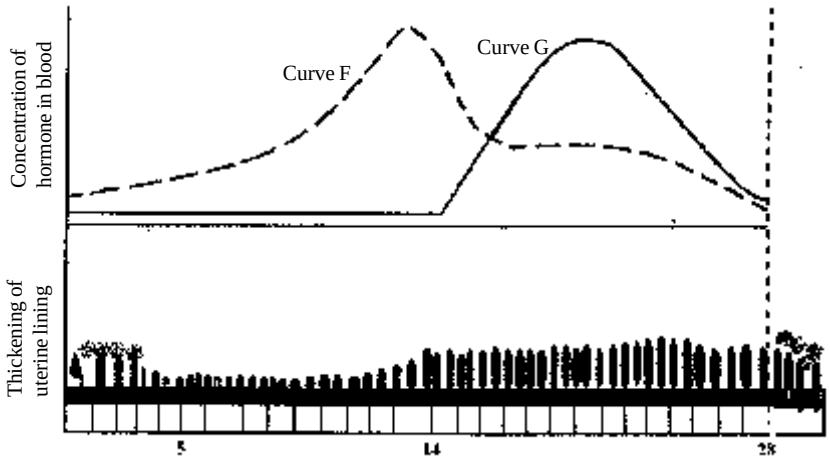
19. The figure below shows changes that takes place during menstrual cycle in human.



a) Name the hormones whose concentration are represented by curves F and G (2marks)

F: .....

G: .....

b) State the effects of the hormones named in (a) above on the lining of the uterus.

F: (1mark)

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G: (1mark)

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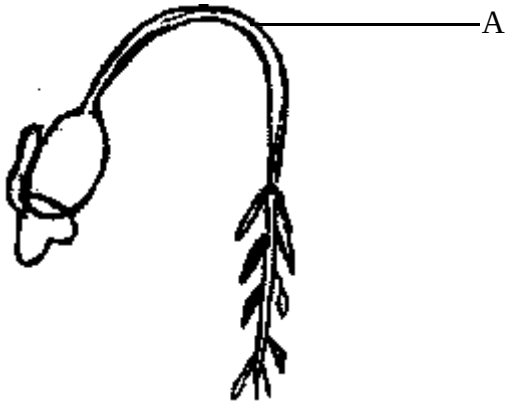
20. The diagram below represents a stage during germination of a seed.



i) Name the type of germination illustrated in the diagram (1mark)

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ii) State the role of the part labelled A during germination of the seed. `(2marks)

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21. Name one waste product that is

a) Almost absent in the renal vein but is normally present in the renal artery (1mark)

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b) Transported in the blood but not removed by kidneys. (1mark)

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22. a) Name the structures used for gaseous exchange in spermatophytes. (2marks)

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b) How is aerenchyma tissue adapted to its function? (2marks)

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23. a) What is meant by the term sex-linked genes (1mark)

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b) State any **two** examples of sex-linked traits (2marks)

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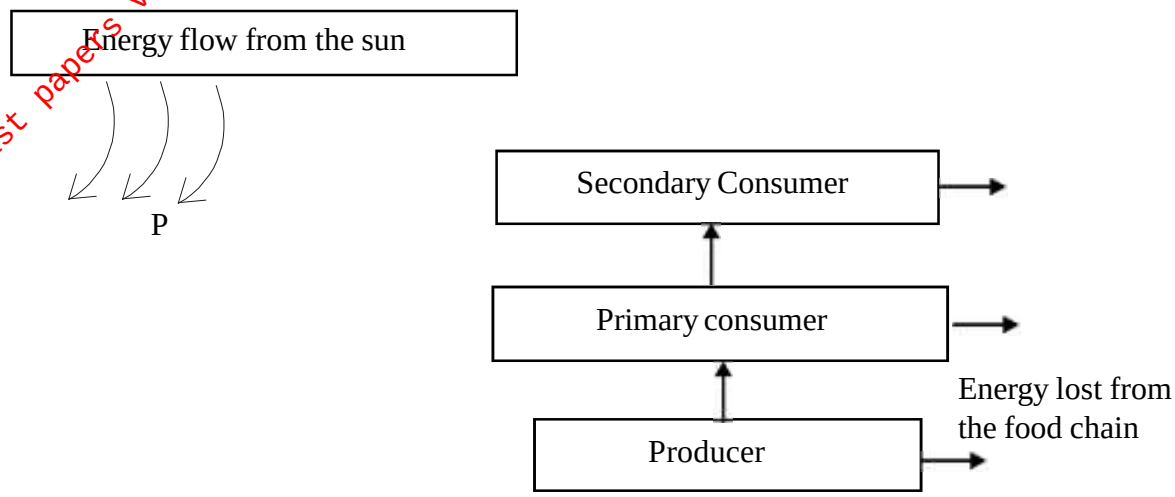
24. The diagram below represents the flow of energy in a food chain



a) Suggest a reason why the energy labelled P does not enter the food chain. (1mark)

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b) State **one** way in which energy is lost in the food chain. (1mark)

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c) Give reasons as to why the biomass of the primary producers is greater than that of primary consumers in a balanced ecosystem. (2marks)

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25. a) What is importance of variation. (1mark)

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b) Explain how gamete formation leads to variation. (2marks)

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26. State **two** ways by which the skin prevents entry of micro-organism into the body. (2marks)

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27. a) Name the cell organelle that would be abundant in

i) Skeletal muscle. (1mark)

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ii) Palisade cell. (1mark)

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b) Distinguish between resolution and magnification as used in microscopy. (2marks)

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28. Outline any **two** examples of discontinuous variations in humans. (2marks)

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End