**AFRAHA HIGH SCHOOL**

**BIOLOGY FORM FOUR**

**MID-TERM TWO 2013**

1. Colour blindness is a genetic disorder. A carrier woman married a normal man. Using n to represent the gene for colour blindness;

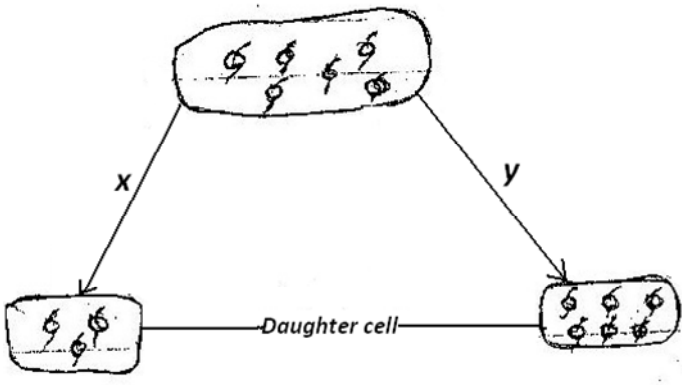
   a) Work out the genotypes of their off springs (4mks)

   b) Name two other traits in human beings that are inherited in a similar manner (2mks)

   c) State two ways that can be used to determine unknown genotypes (2mks)

2 (a) In what two ways is self-pollination not possible in some plants (2mks)

(b) The figure below shows the nucleus of a diploid cell during early prophase and the daughter cell formed after a cell division.




(i) Which type of cell division will result in the formation of the daughter cells represented by X and Y(2mks).

X

Y

(ii) Identify the parts of a flower where process X Takes place (2mks)

3(a) Name two substances that are found in the intercellular spaces of a leaf on a hot sunny day.(2mks)

(b) Outline any two adaptations of a leaf for gaseous exchange. (2mks)

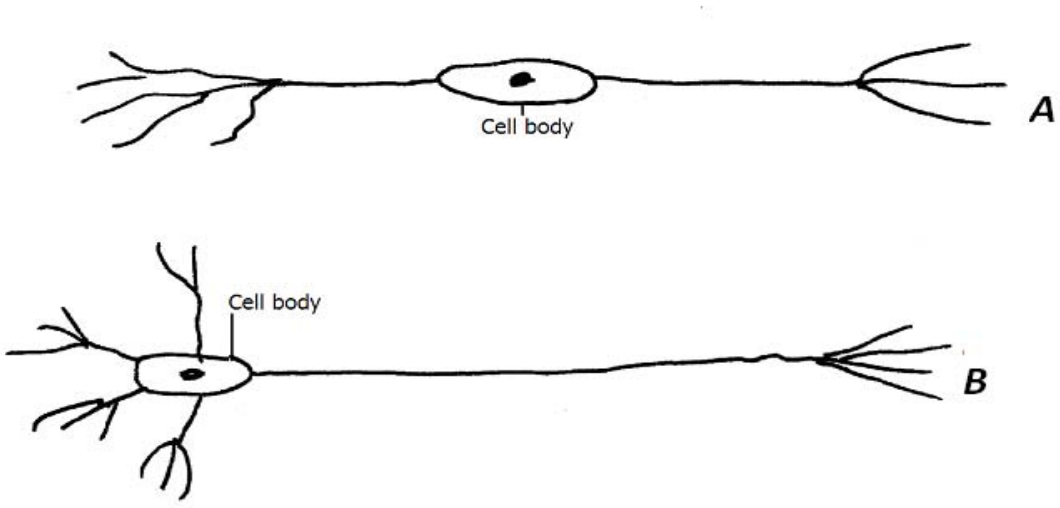
4. State two ways in which nephrons of desert animals differ from those of man. (2mks)

5.During the schools sports day, a student participated in a hundred metres race.

a) State three factors of the internal environment that changed. (3mks)

b) State two significance of respiratory quotient (2mks)

6. The diagrams below shows two types of neurons. Study them carefully and answer the Questions that follow




a) With a reason identify each neurone

A (2mks)

B (2mks)

b) How is a neurone adapted to perform its function (2mks)

7. Give one role of the following hormones in the female menstrual cycle

(i) Oestrogen (1 mk)

(ii) Luteinizing hormone (1 mk)

8. (a) State two effects of parasitic round worms on human beings (2mks)

(b) Name the causal organism of the following diseases; (2mks)

(i) Typhoid

(ii) Amoebic dysentery

9. (a) Define the following terms (3mks)

(i) Homologous structures

(ii) Analogous structures

(iii) Vestigial structures

(b)In which two ways do the fossil records provide evidence for organic evolution (2mks)

(c) State the role of sexual reproduction in organic evolution (1mk)

10. Which type of response is exhibited by; (3mks)

(a) Maggots moving towards dark areas ……

(b) M*imosa pudica* folding leaves when touched ……

(c) The plumule growing upwards …….

11. The diagram below represents a specialized cell of a certain tissue.

(i) Identify the cell s (1mk)

(ii) Name two structures in the human body where the cells are found (2mks)

12. A student while carrying out an experiment observed 8 cells across the field of view of a light microscope. If the diameter of the field of view is 5 mm, calculate the average length of each cell in micrometers. (2mks)

13 . A student collected an organism in the school compound and noted that it had a segmented body and two pairs of legs per body segment.

(i) Name the class to which the organism belongs. (lmk)

(ii) State two other features the student may have observed. (2mks)

14. Describe the changes that occur to the rib cage and the diaphragm during expiration. (4mks)

15. Name two homeostatic roles of the liver (2mks)

16. State two functions of muscles found in the walls of the alimentary canal (2mks)

17. Two sets of a pea seeds were germinated set A was placed in normal daylight conditions in the laboratory while set B was placed in a dark cupboard. Starting a few days later the shoots lengths were measured twice daily and their mean lengths are shown in the table below.

| Time in hours | 0 | 12 | 24 | 36 | 48 | 60 | 72 | 84 |
|---|---|---|---|---|---|---|---|---|
| Set A length (mm) | 12 | 14 | 20 | 23 | 28 | 31 | 47 | 54 |
| Set B length (mm) | 17 | 23 | 28 | 35 | 48 | 62 | 80 | 94 |

a) Using the above data, plot these figures on a graph paper showing growth curves of the two sets of seedlings against time (8mks)

b) From the graph state the mean shoot length of each set of seedling at the $66^{th}$ hour. (2mks)

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c) Account for the difference of curve B and A (3mks)

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d) Explain what would happen to set up B if it were allowed to continue to grow under conditions of darkness (2mks)

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e) State three external conditions which should be constant for both set ups (3mks)

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**END**