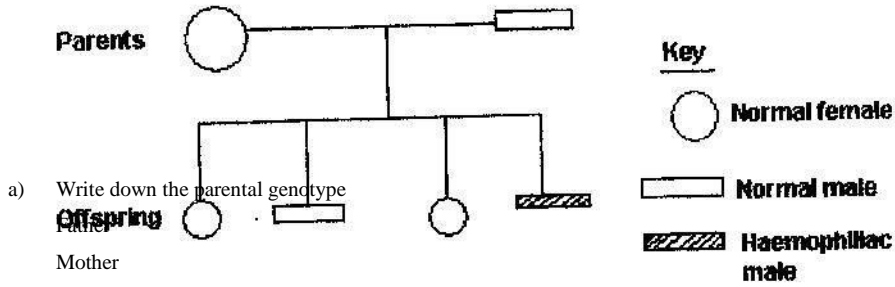
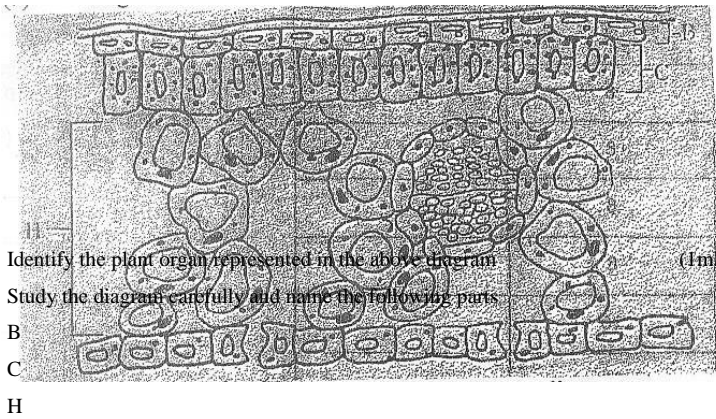


Maranda high

1. a) Study the pedigree chart below showing the inheritance of the allele responsible hemophilia in a certain family



- a) Write down the parental genotype (1mk)
- b) Suppose one of the daughters in the pedigree with the same genotypes as mother marries a hemophilic male, what would be the phenotypic ratio of the normal children to hemophilic children, show your working (5mks)
- c) Name the type of gene mutation that causes the disorder above (1mk)
2. a) The diagram below represents a transverse section through a plant organ



- i) Identify the plant organ represented in the above diagram (1mk)
- ii) Study the diagram carefully and name the following parts (2mks)
- B
 - C
 - H
- iii) In which part of the plant organ does maximum photosynthesis take place (1mk)
- iv) Give a reason for your answer in a iii) above (1mk)
- b) How are guard cells different from other epidermal cells? (2mks)
3. a) Distinguish between pyramid of numbers and pyramid of biomass (2mks)
- b) Describe how the belts transect can be used in estimating the population of a shrub in a grassland (3mks)
- c) Explain how food as a factor regulates population of organisms in an ecosystem
4. The diagram below shows a germinating seed



- a) i) Name the type of germination demonstrated by the diagram (1mk)
 ii) Give a reason for your answer (1mk)
- b) Explain how you would estimate the growth rate in the seedling above (3mks)
5. A patient went to hospital and was advised to eat a lot of carrots
- a) State the deficiency disease he was likely to be suffering from (1mk)
- b) Name two types of food substances in a balanced diet that do not undergo digestion in humans (2mk)
- c) The equation below represents a metabolic process that occurs in the mammalian liver
 Amino acids $\xrightarrow{\text{enzymes}}$ Organic compounds + urea
- i) Name the process (1mk)
- ii) What is the importance of the process to the mammal (2mks)
- iii) What is the difference between essential and non-essential amino acids (2mks)
6. The number of different types of animals supported by a square kilometer in two terrestrial ecosystems are shown in the table below

Type of ecosystem	type of animal	number of animals supported per sq km
Acacia savanna	<u>Domestic Animals</u>	
	Cattle	10
	Goats	30
	Sheep	10
	<u>Wild game</u>	
	Thomsons gazelles	450
	Eland	20
Bushland	<u>domestic animals</u>	
	Cattle	2
	Goats	15
	Sheep	5
	<u>Wild game</u>	
	Thomsons gazelles	200
	Eland	12
	Wild beest	10

- a) i) Which domestic animal is better adapted to both ecosystems (1mk)
 ii) Give a reason why the animal named in a) i) above is better adapted to the two ecosystems (1mk)
- b) Why are cattle and sheep fewer in the bush land than savanna (1mk)
- c) i) Name suitable methods that were used to estimate the population of
 Domestic animals (1mk)
 Wild animals (1mk)
- ii) Give a reason why the method named for wild animals in c) i) above is suitable
- d) State three methods which could be used to determine the diet of wild animals in an ecosystem (3mks)
- e) Name four biotic factors that could have regulated the animal population in both ecosystems
- f) Name four human activities that affect population of animals in game parks (4mks)
- g) What is the importance of national park to a nation (3mks)
7. Explain how leaves are adapted to the process of photosynthesis (20mks)
8. Describe the mechanism of breathing in mammals (20mks)