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NATIONAL EXAMINATIONS COUNCIL
ADVANCED CERTIFICATE OF SECONDARY EDUCATION EXAMINATION
MAY 1995

133/2

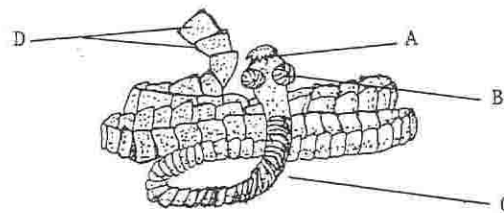
BIOLOGY PAPER 2
(For both School and Private Candidates)

TIME: 2½ Hours.

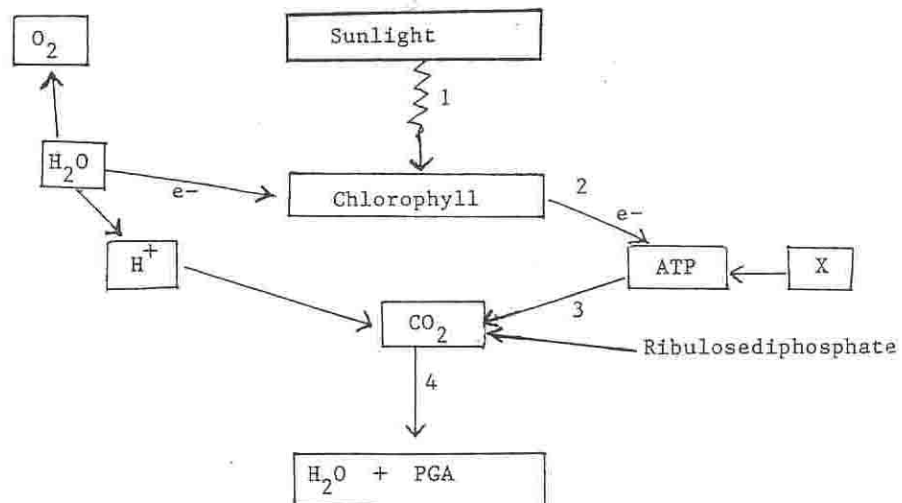
1. Answer ALL questions.
2. Write your Centre and Index Number on every page of your answer book.
3. Except for diagrams, which must be drawn in pencil, all writing must be in blue or black ink/ball point pen.
4. Read each question carefully.

This paper consists of 5 printed pages.

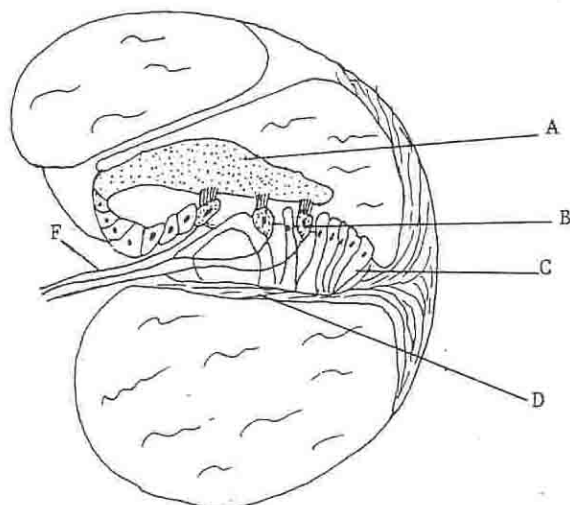
1. How are the following cells adapted for their functions?
 - (a) (i) erythrocyte (ii) neutrophil.
 - (b) (i) vessel element (ii) sieve-tube element.
2. (a) (i) What is a taxon?
 (ii) Explain why organisms in a lower taxon have more features in common than organisms in a higher taxon.
 (b) Name the six classes of the phylum chordata and give one distinguishing characteristic of each.
3. The diagram below, represents a gut parasite of man.



- (a) (i) Name the genus and phylum to which it belongs
 (ii) Give the names of the structures labelled A to D
 (iii) Briefly explain how structures A and B adapt the organism to its mode of life.
 (iv) How does the organism harm its host?
4. The diagram below is an abbreviated representation of some of the processes of photosynthesis.



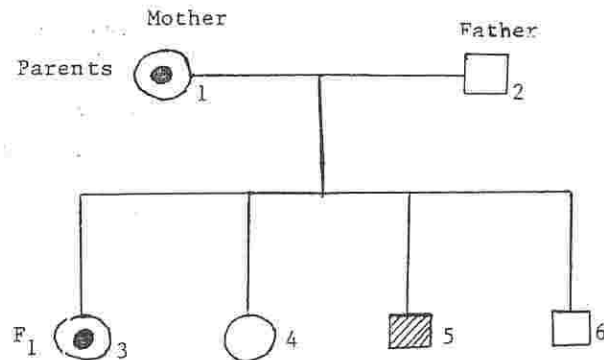
- (a) (i) Identify compound X
(ii) State in which part of the chloroplast the process represented by step 4 occurs.
- (b) What is the fate of PGA? Illustrate your answer by means of a simplified labelled diagram.
5. (a) (i) What is the significance of pollination to plants?
(ii) Describe three natural mechanisms preventing self pollination and favouring cross pollination in flowering plants.
- (b) State what you understand by each of the following terms:
(i) menstrual cycle (ii) gametogenesis.
6. The diagram below represents a transverse section (TS) of cochlea to show the organ of Corti.



- (a) Name the structures labelled A to E
(b) Briefly explain the part played by the organ of Corti in hearing.
7. (a) Explain the fate of pyruvic acid during unaerobic respiration in the tissues of an animal that usually respire aerobically.
(b) What is the physiological reason for shivering?
8. Colour blindness is an autosomal recessive defect.
Refer to the following key and study the pedigree of a family affected by colour blindness given below the key.

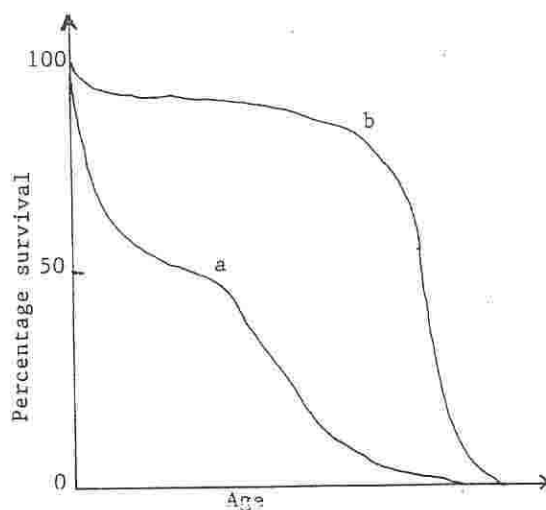
Key:

- - normal female
- - normal male
- - carrier female
- ▨ - colour blind male.



- (a) Make a continuation of the pedigree to show the expected distribution of the gene for colour blindness among F_2 offspring assuming 3 and 5 marry individuals with normal X chromosomes.
 - (b) What are the chances that a carrier grandchild (F_2), will have a colour blind son if she marries
 - (i) a normal man
 - (ii) a colour-blind man? Show how you derive your answer.
9. (a) Sketch a graph to show the effect of substrate concentration on the initial rate of an enzyme controlled reaction.
- (b) Name one example of each of the following in relation to enzymes:
- (i) co-factor
 - (ii) co-enzyme
 - (iii) inhibitor
10. (a) State why vitamin D deficiency results in deformed bones.
- (b) How do ploughing and good drainage increase soil fertility?

11. Distinguish between
- (a) ecological succession and climax community
 - (b) ecological niche and trophic level.
12. The diagram below shows two survivorship curves for a human population in two different countries.



- (a) Briefly interpret the two curves
- (b) Suggest possible causes for the difference in survivorship of the human population in the two countries.