THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
ADVANCED CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

133/3A

BIOLOGY PAPER 3A
ALTERNATIVE A PRACTICAL
(For Both School and Private Candidates)

TIME: 3¼ Hours

31 May 1999 A.M.

INSTRUCTIONS

1. Answer ALL questions.
2. Write your Centre and Index Number on every page of your answer booklet.
3. Except for diagrams, which must be drawn in pencil, all writing must be in black or blue ink/ball point pen.
4. Read each question carefully.
5. The mark allocation is indicated at the end of each question.

This paper consists of 4 printed pages.

1. Dissect specimen S1 in the usual way. Deflect the gut to YOUR right hand side and then fully display the following:
   - components of the gut between the stomach and the rectum.
   - glands associated with digestion including their ducts.
   - hepatic portal vein and hepatic vein.

   (a) Draw a large, neat well labelled diagram of your dissection. (26 marks)

   (b) (i) State the functions of the veins named above.

   (ii) Where in specimen S1 do the following processes take place?
   Maceration of food and digestion of lipids. (2 marks)

LEAVE YOUR DISSECTION WELL DISLPLAYED FOR ASSESSMENT. (10 MARKS)
(Total 40 marks)

2. You are provided with specimens S2, S3 and S4 in solution form. One of the specimens contains two types of food substances and the remaining specimens contain one type of food substance each. Using the chemical reagents provided, design and carry out tests to identify the food substances present in S2, S3 and S4. Tabulate your results in the usual way. (30 marks)

3. (a) Study specimen S5 carefully.

   (i) Give the technical term for specimen S5. (1 mark)

   (ii) To what family does S5 belong? (1 mark)

   (iii) Using a scalpel or razor, make a longitudinal section (L.S.) of specimen S5 so as to divide it into two equal halves. Observe the cut side of one of the halves by using a hand lens. Draw and label. (8 marks)

   (iv) State the functions of the parts you labelled in 3 (a) (iii). (5 marks)

   (b) Carefully examine specimen S6.

   (i) What is the common name for S6? (1 mark)

   (ii) State the phylum to which S6 belongs. (1 mark)

   (iii) Where in nature do you expect to find specimen S6? (1 mark)

3. You are provided with specimens S5 and S6. With the help of the key provided below, identify specimens S5 and S6 by writing down the number for the positive statement until you arrive at the correct order (represented by letters) for each specimen. Work with one specimen at a time.

(12 marks)

Key to some insect Orders (represented by Letters)

1a.	Wingless	go to 2
1b.	Winged	go to 8
2a.	Antennae absent	Order A
2b.	Antennae present (may be difficult to see)	go to 3
3a.	Abdomen with tubular, pincher-like or threadlike extension behind	go to 4
3b.	Abdomen without extensions behind	go to 5
4a.	Eyes absent	Order B
4b.	Eyes present and conspicuous.....	Order C
5a.	Mouth parts tubular for sucking	go to 6
5b.	Mouth parts not tubular, for biting and chewing.....	go to 7
6a.	Sucking tube long, straight and beaklike, body flattened from top to bottom, tips of feet with claws	Order D
6b.	Sucking tube short and conical, body not flattened from top to bottom, tips of feet with pads	Order E
7a.	Abdomen constricted and with a bead –like enlargement at connection with thorax	Order F
7b.	Abdomen broadly joined to thorax	Order G
8a.	Wings, 1 pair	Order H
8b.	Wings, 2 pairs	go to 9
9a.	Front wings and hind wings similar in texture	go to 10
9b.	Front wings and hind wings not alike in texture	go to 11
10a.	Wings much larger than body with numerous cross veins and held at an angle (roof like) over the body when at rest	Order I

10b. Wings not much longer than body, many longitudinal veins but few cross veins and held flat on back when at rest ..... Order J

11a. Front wings leathery at base, membranous at tip, mouth parts in the form of a long sucking tube ..... Order K

11b. Front wings leathery or parchment –like throughout, mouth parts for biting and chewing..... go to 12