S.4 HOLIDAY WORK BIOLOGY
ANSWER ALL QUESTIONS
TEST 1

1. Recently there has been a campaign on tree planting in Uganda. Discuss the importance of forest on wildlife conservation in Uganda.
2. (a) What is photosynthesis?
   (b) List the conditions necessary for photosynthesis.
   (c) Describe an experiment to show that any one of the named conditions is necessary for photosynthesis.
3. A potted dicotyledonous plant was placed in darkness for three days. Four leaves A, B, C and D from the plant were then treated as shown in the table below, without removing the leaves from the plant.

Leaf	*Treatment*	*Observation*
A	Upper surface only coated with petroleum jelly.	
B	Lower surface only coated with petroleum jelly	
C	Both upper and lower surfaces coated with petroleum jelly	
D	Both surfaces were not coated.	

   (a) Record, in the table above, the expected colour change for each leaf after treatment with iodine solution. Use the following phrases: intense blue black; faint blue black; very faint blue black and yellow brown.

(b) Give reasons for the colour change you record in (a) for each of the leaves A, B, C and D.

4. (a) What is 'tissue respiration'?
   (b) Explain why tissue respiration is an important process.
   (c) Describe an experiment to show that germinating seeds liberate carbon dioxide.
5. The table below shows data collected from an athlete before, during and after a period of running.

Running time(mins)	0	2	4	6	8	10	12	14	16	18	20	30	40
Concentration of lactic acid in blood ($mg/100cm^3$)	3	10	28	45	50	44	40	36	33	30	26	12	8

   a) Draw a graph to represent the above data.
   b) From the graph in a) above state the lactic acid concentration at
      i) 3 mins
      ii) 15 mins
   c) Describe the graph in (a) above.
   d) Name the
      i) Process responsible for production of lactic acid.
      ii) Tissue where lactic acid is produced in the body.
   e) i state one effect of lactic acid accumulation in the body tissues.
      ii) Which period on the graphs shows the period of recovery?
      iii) State what happens to the lactic acid during recovery period

TEST 2

6. (a)Briefly describe the digestive processes that take place in
   (i) the duodenum
   (ii) the ileum

(b) How is the absorption surface of the alimentary canal adapted for its function?

7. (a) What are the components of a fertile soil?
   (b) Describe an experiment to show that sandy soil drains faster than clay soil.

(c) State the difference between the properties of sand and clay, apart from the one mentioned in (b) above.

8. (a) What is an endocrine gland?

(b) Draw and label a diagram to show the location of the endocrine glands in the human body.

(c) Outline the role of the 'master gland' in the body.

8. (a) What is a parasitic mode of nutrition?

(b) Describe the life cycle of a tapeworm.

(c) Give reasons why a tapeworm is a successful parasite.

10.(a) List the excretory products of animals.

(b) With the aid of the labeled diagram describe the parts played by the mammalian kidney in excretion.

11.(a) How is self-pollination prevented in flowering plants?

(b) Outliner the events leading to the formation of a seed in flowering plants.

TEST 3

12. How does gaseous exchange occur in amphibians in aquatic and terrestrial habitats?

13.(a) State four ways by which the mammalian body loses

i) heat

ii) water

(b)How does the mammalian body maintain a constant temperature?

15. Red blood cells burst or haemolysed when immersed in low salt concentrations. The table below shows the effect of salt concentration on red blood cells.

Salt concentration ($moll^{-1}$)	0.33	0.36	0.38	0.39	0.42	0.4	0.48
Percentage of red blood cells haemolysed	100	90	80	68	30	16	0

a) Plot a graph of red blood cells haemolysed against salt concentration.

b) At what percentage of salt concentration are all the red blood cells haemolysed?

c) i) From the figures above, suggest the safest percentage concentration for human blood.

ii) Give a reason for your answer.

d) i) What is the concentration of the cytoplasm of the red blood cells? Give a reason for your answer.

e) Explain what would happen to red blood cells if they are placed in 0.6 percent salt solution?

15. (a) Distinguish between diffusion and osmosis.

(b)Describe an experiment to demonstrate osmosis, using a named plant material.

(c)How is the root hair adapted to its functions?

16. (a) what is growth?

(b)Name the main parts responsible for producing growth in a shoot.

(c) Describe an experiment you would perform to determine the region of most rapid elongation in the root of a bean seedling.

17 (a) what do you understand by the term 'irritability' as applied to plants and animals?

(b)Explain how plants respond to light as a factor of irritability.

(c)Name any three other tropic responses in plants.

END