INSTRUCTIONS TO CANDIDATES:

- Write your name and index number in the spaces provided.
- Sign and write date of examination in the spaces provided above.
- Answer all the questions in section A and B.
- You are required to spend the first 15 minutes of the 1 ¾ hours allowed for this paper reading the whole paper carefully.

For Examiner’s Use Only:

<table>
<thead>
<tr>
<th>QUESTIONS</th>
<th>MAXIMUM SCORE</th>
<th>CANDIDATES SCORE</th>
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<tr>
<td>1</td>
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<td><strong>TOTAL</strong></td>
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This paper consists of 4 printed pages. Candidates should check to ascertain that all papers are printed as indicated and that no questions are missing.

© KSW – 2011 Form Four Biology 231/3
1. You are provided with a visking tubing, liquids J and K, iodine solution, and DCPIP solution.

   a) Use iodine solution to test for the food substance in 2 ml of each of the liquids J and K, and record your observations. (2 mks)
      (i) Observation in liquid J

      (ii) Observation in liquid K

   b) Use DCPIP solution to test for food substance in 2 ml of each of the liquids J and K, and record your observations. (2 mks)
      (i) Observation in liquid J

      (ii) Observation in liquid K

   c) Tie one end of the visking tubing tightly using one of the pieces of thread provided. Pour 10 ml of liquid J into the visking tubing. Using a long dropper, tie the other end of the visking tubing tightly. Ensure that there is no leakage at both ends of the visking tubing. Pour 30 ml of liquid K into a 100 ml beaker. Wash the outside of the visking tubing with distilled water. Place the visking tubing in a horizontal position inside the 100 ml beaker containing liquid K. Ensure that the visking tubing is fully submerged by liquid K. Allow the setup to stand for 40 minutes. Remove the visking tubing from the beaker. Using iodine solution and DCPIP solution provided, carry out tests for food substances in the liquid in 100 ml beaker. Record the test, procedure, observation, and conclusion in the table below. (4 mks)

<table>
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<tr>
<th>Test</th>
<th>Procedure</th>
<th>Observation</th>
<th>Conclusion</th>
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   d) Account for your results in the table above. (5 mks)

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2. Below are photographs of a mammalian spinal cord and brain. Study them carefully and answer the questions that follow.

![Spinal Cord and Brain Diagram]

a) Name the parts labelled A, C, and E.
   A: .......................................................... (3mks)
   C: ..........................................................
   E: ..........................................................

b) State the functions of the parts labeled B and D.
   B: ..........................................................
   D: ..........................................................

(c) The part labeled G contains a fluid that extends into the spinal cord.
   (i) Identify the part labeled G. .......................................................... (1mk)
   (ii) Name the fluid contained in the part labelled G ..........................................................
   (iii) State two functions of the fluid named in (c)(ii) above. ..........................................................

(d) Explain the significance of the folding in the part labelled F. ..........................................................

(e) Part K which is found in the brain receives and processes visual information. Label part K in the photograph. ..........................................................

(f) Explain why the part labeled B is darker than A in the spinal cord. ..........................................................

(g) State one difference between nervous system and endocrine system. ..........................................................

3. Photographs I, II, III below were taken from organisms under kingdom plantae. Photographs I and III belong to two organisms under the same division, and one organisms gives rise to another in the process of alteration of generations.
a) Name the division to which each of the organisms in photographs I and II belongs. (2mks)
   (i) Division in photograph I……………………………………………………………………………….
   (ii) Division in Photograph II……………………………………………………………………………

b) Identify the parts labeled Q, T and X. (3mks)
   Q……………………………………………
   T……………………………………………
   X……………………………………………

c) The parts labeled R, V and Y perform the same function. State their function. (1mk)
   ……………………………………………………………………………………………………………………..

d) (i) Name the spore producing structure in the organism in photograph II. (1mk)
   ……………………………………………………………………………………………………………………..
   (ii) Which of the photographs I and II was taken from an organism that represents the dominant generation in their division? (1mk)
   ……………………………………………………………………………………………………………………..

e) Identify each of the organisms in photograph I and II. (2mks)
   (i) Organisms in photograph I………………………………………………………………………………..
   (ii) Organism in photograph II………………………………………………………………………………..

f) Describe how the organism in photograph III is formed from that in photograph I. (3mks)
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