**NAME…………………………………………………… INDEX NO……………………........................**

**SCHOOL………………………………………………… DATE…………………………………………**

**SIGNATURE……………………………………………..**

**BIOLOGY**

**231/3**

**(PRACTICAL)**

**JULY/AUGUST, 2017**

**TIME: 1¾ HOURS**

**JULY/AUGUST EVALUATION TEST - 2017**

**FORM FOUR EXAMINATION**

**INSTRUCTIONS TO CANDIDATES:**

(a) Write your **name** and **index number** in the spaces provided above.

(b) **Sign** and write the **date** of examination in the spaces provided above.

(c) Answer all the questions in the spaces provided.

(d) You are required to spend the first 15 minutes of the 1¾ hours allowed for

this paper reading the whole paper carefully before commencing your work.

(f) This paper has **three** questions. Students should check the question paper to ascertain that all the papers are printed as indicated and that no questions are missing.

**FOR EXAMINER’S USE ONLY:**

|  |  |  |
| --- | --- | --- |
| **Question** | **Maximum**  **Score** | **Candidate’s**  **Score** |
| **1** | **14** |  |
| **2** | **15** |  |
| **3** | **11** |  |
| **Total Score** | **40** |  |

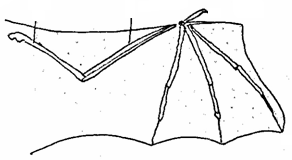
1. a) You are provided with substances labeled **M, N, V, U** and **X** and a filter paper. **M** and **N** are food substances, while **V** is Benedict’s solution, **U** is 10% Sodium Hydroxide solution and **X** is 1% Copper Sulphate solution. Using the reagents provided, carry out tests to determine the food substance(s) in **M** and **N** (10 marks)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Substance** | **Food Substance Being Tested For** | **Procedure** | **Observation** | **Conclusion** |
| **M** |  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| **N** |  |  |  |  |
|  |  |  |  |
|  |  |  |  |

b).State the functions of the food substances found in both **M** and **N**. (4marks)

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………..………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………….

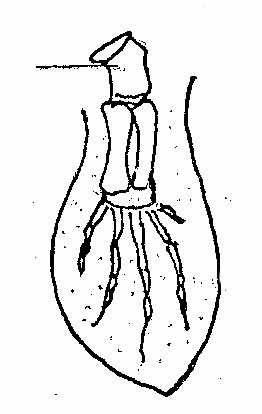
2. Figure 1 represents a bat wing, Figure 2 a whale paddle and Figure 3 an insect wing. Study the diagrams and answer the questions that follow.



**Figure 1**

**H**

**E**



**Figure 2**

**F**



**Figure 3**

**G**

**S**

(i) Name parts labeled **E** and **F**. (2 marks)

**E** ………………………………………………………………………………………………

**F** ………………………………………………………………………………………………

(ii)Suggest the type of structures represented in Fig 1 and 2. Give a reason for your answer (2 marks)

………………………………………………………………………………………………

…………………………………………………………………………………………….…

(iii)Name the type of joint found at proximal end of bone marked **H**. (1 mark)

………………………………………………………………………………………………

iv) What type of evolution is represented by existence of bat and insect wings? Explain your answer. (3marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………v) The wings of a kiwi unlike those of a bat are greatly reduced.

1. Name the type of structures represented by wings of a kiwi ( 1mark)

……………………………………………………………………………………….

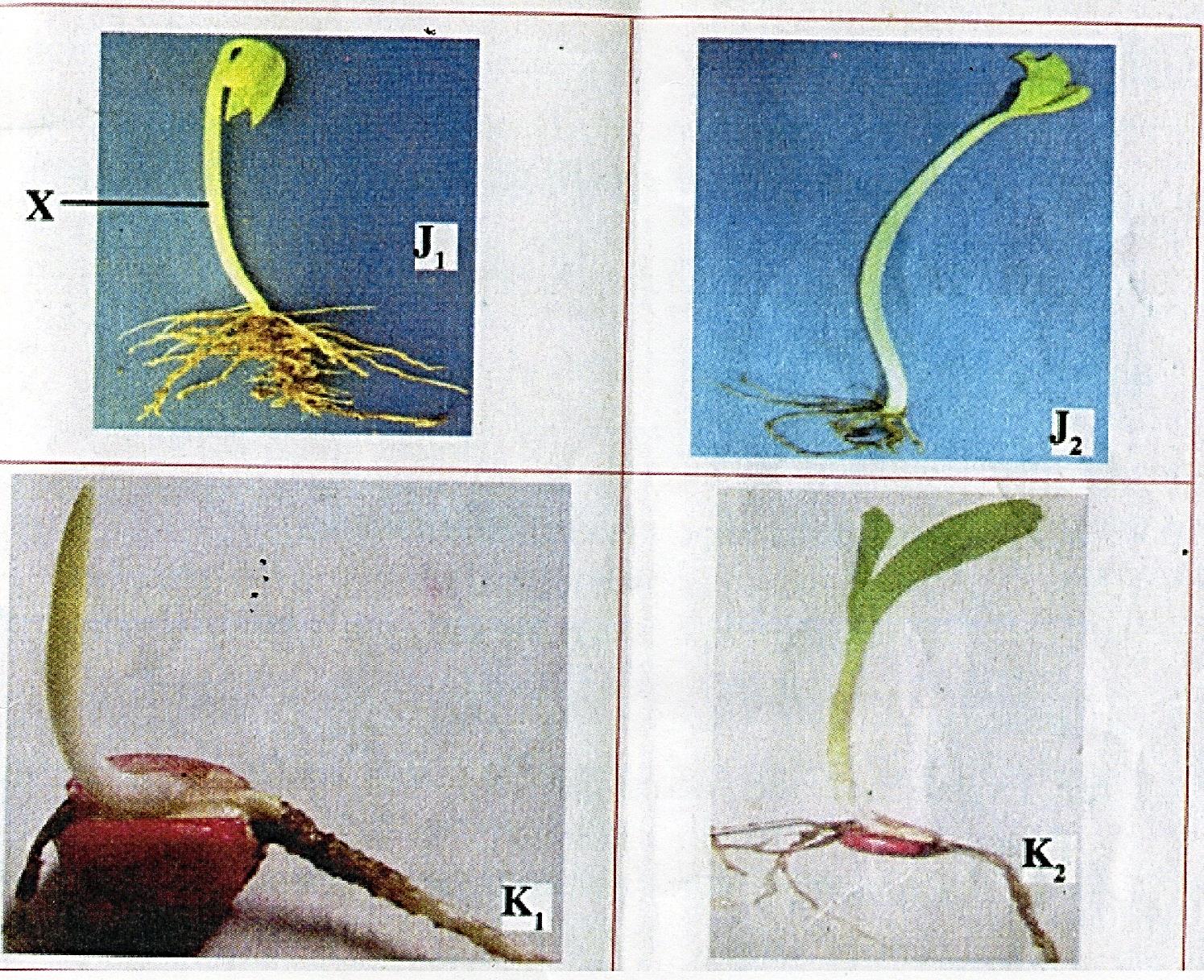
1. Why are wings of kiwi greatly reduced? (1mark)

……………………………………………………………………………………….

1. State the type of skeleton found on the part labeled S (1mark)

………………………………………………………………………………………

3. You are provided with photographs of the specimen labelled J1, J2, K1, K2 examine them.



a) With a reason name the class to which specimens J1 and K1 belong. (4mks)

J1 ……………………………………………………………………………………………………

Class: ………………………………………………………………………………………………..

Reason: ……………………………………………………………………………………………...

K1 ……………………………………………………………………………………………………

Class: ………………………………………………………………………………………………..

Reason: ……………………………………………………………………………………………...

b) i) Name the part labelled X in specimen J1. (1mk)

……………………………………………………………………………………………………………………………………………………………………………………………………………….

ii) What is the importance of the curvature? (1mk) ……………………………………………………………………………………………………………………………………………………………………………………………………………….

c) Name the part that protects the plumule in specimen K1 and K2. (1mk) ……………………………………………………………………………………………………………………………………………………………………………………………………………….

d)i) Which of the two types of seedlings may form swellings on the root later in its life?

(1mk) ……………………………………………………………………………………………………………………………………………………………………………………………………………….

ii) Give the name of the swelling in e(i) above. (1mk) ……………………………………………………………………………………………………………………………………………………………………………………………………………….

iii) Name the organism that would be found in the swellings. (1mk) ……………………………………………………………………………………………………………………………………………………………………………………………………………….

iv) Name the relationship that exist between the named organism and the plant. (1mk) ……………………………………………………………………………………………………………………………………………………………………………………………………………….

e) i) Name the structure found on the stem just below the leaves of specimen J2. (1mk) ……………………………………………………………………………………………………………………………………………………………………………………………………………….

ii) State one function of the structure named in e (i) above. (1mk) ……………………………………………………………………………………………………………………………………………………………………………………………………………….

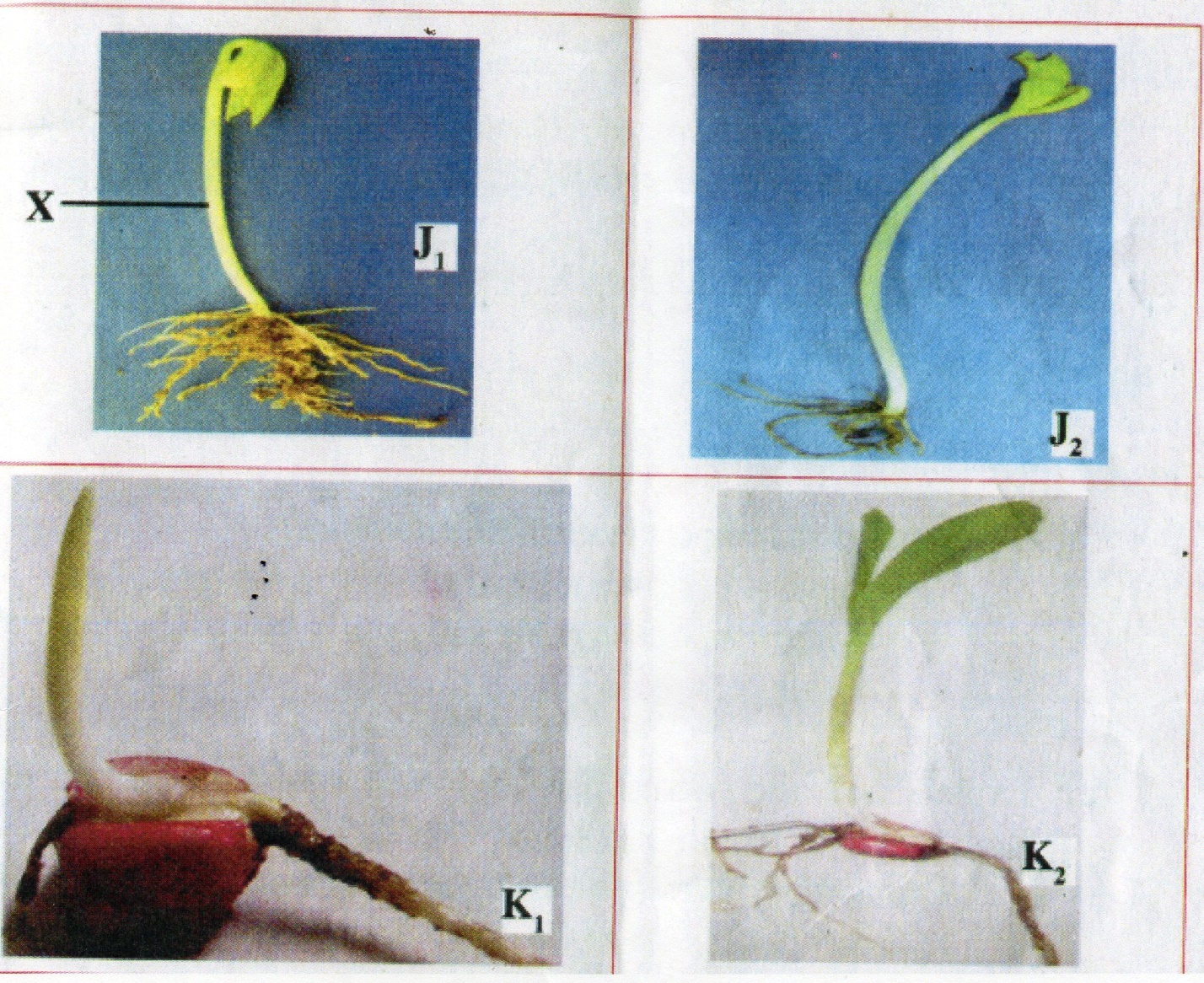
f) Name the root system found in specimens (2mks)

i) J1 and J2.

……………………………………………………………………………………………………………………………………………………………………………………………………………….

ii) K1 and K2.

……………………………………………………………………………………………………………………………………………………………………………………………………………….



**JULY/AUGUST**

**BIOLOGY PAPER 3**

**MARKING SCHEME 231/3 2017**

1.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SUBSTANCE** | **FOOD SUBSTANCE BEING TESTED FOR** | **PROCEDURE** | **OBSERVATION** | **CONCLUSION** |
| M | Reducing Sugars√ | To M,  Add equal amount of Benedict’s solution; and / heat to boil; (2mks) | Co colour changes from blue to green and yellow. / colour changes from blue to green. (½ mk)  ( | Reducing sugars present / little reducing sugar is present;√ (½ mk) |
| Proteins√ | (To M)  Add (10%) sodium hydroxide solution then (1%) copper sulphate solution√ (drop wise)(1mk) | Colour changes to purple  (½ mk) | Proteins present √(½ mk) |
| Lipids√ | Pour a drop of M onto the filter paper and dry√(1mk) | No permanent translucent spot formed√.(½ mk) | Lipids absent;√ (½ mk) |
| N | Reducing sugars | (To N) add Benedict’s solution and / heat to boil / boil | Colour changes from blue to green;√ (½ mk) | Little / traces reducing sugars present √(½ mk) |
| Proteins | (To N) add (10%) sodium hydroxide solution then (1%) copper sulphate solution ( drop wise) | Colour changes to purple  (½ mk) | Proteins present;√(½ mk) |
| Lipids | Pour a drop of N onto the filter paper and dry. | A permanent translucent spot forms √(½ mk) | Lipids present;√(½ mk) |

b) **Reducing sugars;**

* Source of energy when oxidized
* Are condensed to form starch for storage in plants / glycogen for storage in animals

(2 x 1 = 2 marks)

**Proteins**

* Forms structures in living organisms
* Forms metabolic regulators / enzyme / hormones
* Source of energy during **starvation**; (Any 2 x1 = 2 marks)

2.(i) E-Radius; (1mk)

F-Humerus;( 1mk)

ii)Homologous structures; reason-presence of pentadactyl structure/similar bone anatomy;( 2mks)

iii)Ball and socket joint;( 1mk)

iv)Convergent evolution;reason-Both have different embryonic origin but serve similar function/used for flight; ( 3mks)

v) i) vestigial structures; (1mk)

ii)Ceased to function/lack a particular function;(1mk)

iii)Exoskeleton;( 1mk)

3. a) J1

Class: Dicotyledonae (1mk)

Rj Dicot/ Dicotyledeon

Reason: leaf net-veined/ net venation/reticulate/ two cotyledons/taproot system (1mk)

K1 Class: Monotyledonae Rj; monocot/ monocotyledon (1mk)

Reason: Parallel veins/ parallel venation/ one cotyledon/ fibrous root system.(1mk)

b) i) X- Hypocotyl (1mk)

ii) – Protects the plumule/ shoot tip/ first foliage leaves. (1 mk)

- Penetrates through the soil/Pulls the cotyledons out of the soil.

c) Coleoptile/ plumule sheath (1mk)

d) i) J1 and J2 (1mk)

ii) Root nodules. NB tied to d(i) (1mk)

iii) Rhizobium spp (1mk)

iv) Symbiotic relationship/symbiosis; (1 mark)

e) i) Cotyledons/ seed leaves

ii) – Carry out photosynthesis to provide food for the germinating seedling.

- Food reserve/ stores food/ provide food for the germinating seed. Tied to e (i)

any 1x1 (1 mk)

f) J1 and J2 – Tap root system/ Tap roots. (1mk)

K1 and K2- fibrous roots/ Fibrous root system (1mk)