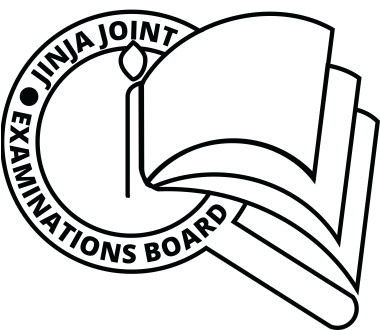
**JINJA JOINT EXAMINATIONS BOARD**

**MOCK EXAMINATIONS 2019**

**553/3 BIOLOGY**

**MARKING GUIDE**

1. You are provided with suspension R and solution S.
2. Carry out the following tests to identify the food nutrients in suspension R and the identify the nature of solution S.

Record your observations and deductions in the table below (10 mks)

|  |  |  |
| --- | --- | --- |
| Test | Observation | Deduction |
| 1. To 1cm3 of solution R add 3 drops of iodine solution | The turbid solution to a black solution | Starch present |
| 1. To 1cm3 of solution R in the a test – tube add 1cm3 of sodium hydroxide solution followed by 4 drops of copper (II) sulphate solution and shake | To turbid solution turned to a purple solution.  acc violet solution | Proteins present |
| 1. To 1cm3 of solution R in a test – tube add 1cm3 of Benedicts solution and boil | A turbid solution turned to a blue solution and remains blue.  acc purple solution. | Reducing sugar absent |
| 1. To 1cm3 of DCPIP in a test – tube add solution R drop by drop to 12 drops | The blue solution remains a blue solution | Vitamin C absent |

Table 1

1. Put 2cm3 of solution R in a test – tube add an equal volume of solution S and then 2cm3 of dilute hydrochloric acid. Incubate the mixture in a water bath maintained at a temperature of 370C – 400C for 20 minutes.

After 20 minutes, carry out Iodine and burette tests. Record all your work in the table below (07 ½ mks)

Table 2

|  |  |  |
| --- | --- | --- |
| Test | observation | Deduction |
| 1. Iodine ‘s test   To 1cm3 of the mixture add 3 drops of iodine solution | The turbid solution turned to a black solution | Starch present |
| 1. Burette’s test   To 1cm3 of the mixture add 1cm3 of sodium hydroxide solution followed by 3 drops of copper (II) sulphate solution and shake. | The turbid mixture turns to a blue solution.  acc blue ppt | Proteins absent |

1. Explain your results in experiments (i) and (ii) in table 2 (04 mks)
2. Test I

The mixture turned black solution indicating presence of starch because starch was not hydrolysed during incubation.

1. Test II

The mixture turned to ablue solution because indicating the active ingredient in solution S hydrolysed/ broke down the proteins hence no proteins.

1. From your results in table 1 and table 2
2. Suggest with a reason the identity of the solution S

Identity of solution S

Enzyme pepsin

acc enzyme alone but deny marks for reason.

Reason

Because it hydrolysed proteins.

1. State one property of solution S. Give a reason for your answer.

It is specific in nature because it hydrolysed proteins and not starch.

1. You are provided with specimen X and Y which were obtained from the same bird .
2. (i) State the name of each specimen (01 mks)

X Femur

Y Humerus

(ii) From which part of the body was each specimen obtained (01 mks)

X Hind limb

Y Fore limb

1. State the name of the bones with which each specimen articulated at each of its ends.
2. Bones that articulate with specimen X (02 mks)

* Lower end ulna and radius
* Upper end scapula

1. Bones that articulates with specimen Y (02 mks)

* Lower end patella and tibia
* Upper end pelvic girdle

1. Using observation features suggest the type of joint formed at each end of each specimen.
2. Specimen X

* Upper end ball and socket
* Lower end hinge joint

1. Specimen Y

* Lower end hinge joint
* Upper end ball and socket

1. (i) State two functions of the specimens (02 mks)

* Support the body
* For locomotion

1. How are the specimens suited of the functions mentioned in d(i) above.

(02 mks)

* Long to provide large surface area for attachment of muscles
* Have a long board shaft for srpport.

1. Draw and label specimen X. State the magnification of your drawing.

(05 mks)

Drawing of specimen X

Head of femur

Greater trochanter neck of femur

Lesser trochanter

shaft

lateral condyle medial condyle

X2 – X5

1. You are provided with specimens E, F, G, and H which are fruits
2. Giving a reason in each case identify each of the specimens (06 mks)
3. Specimen E

Identify

Schizorcarp

Reason

Has many loments / many single seeded fragments

1. Specimen F

Identify

Cypsela

Reason

Has pappus/ persisting hairy calyx.

1. Specimen G

Identify

Berry

Reason

* Fleshy pericarp
* Many seeds

1. Specimen H

Identify

Legume

Reason

* Has a dry pericarp with two sutures/ lines of weakness.

1. Examine specimens E, F and G using a hand lens where necessary and describe how each of the specimens E, F and G are dispersed.
2. Specimen E

* Has hooked hairs with loose loments which get attached on the fur/ clothes of moving animals that remove and dump/ throw them in new places.

1. Specimen F

* It is small and light with a persistent calyx which forms a paractute that increase buoyancy and therefore dispersed by wind.

1. Specimen G

* Has a brightly coloured epicarp which attract animals that eat them and drop their seeds later in faeces since they are hard and reisit digestive enzymes. acc pericarp insteady of epicarp

1. (i) State two observable characteristics of each of the specimens E, F, G

and H (04 mks)

**Table 3**

|  |  |  |
| --- | --- | --- |
| Specimen | | Characteristics |
| E | * has hooked hairs seeded * Many loose one seeded loments | |
| F | * Has pappus * One seed * Dry pericarp | |
| G | * Many seeds * Fleshy pericarp * Brightly colouredepicarp | |
| H | * Many seeds * Dry pericarp * Smooth surface * Two sutures/ lines of weakness | |

(ii) Using the information in the table 3 construct a dichotomous key to

identify the specimens E, F, G, and H. (03 mks)

1

1. Has pappus .............................................................................F
2. Has no pappus ........................................................................2

2

1. One seeded ..............................................................................N
2. Many seeded...............................................................................3

3

1. Fleshy pericarp...........................................................................G
2. Dry pericarp ...............................................................................H
3. Draw and label specimen E. State your magnification. (03½ mks)

Drawing of specimen E.

Persistent calyx suture

Hooked

Fruit stalk hair

X2

loment

**E N D**