

FORM 3 END OF TERM 3 2024 - MARKING SCHEME

BIOLOGY PAPER 3

1. You are provided with solution W, Solid Q, Iodine solution, Benedict's solution, Hydrochloric acid and Water bath.

a) Using reagents provided carry out tests to determine the food substance present

Record the procedure, observation and conclusion in the table below (6mks)

Food substance	Procedure	Observation	Conclusion
<i>Reducing sugar(s)</i> <u>Reject:</u> Specific sugars e.g. Glucose/ Simple sugars/ Monosaccharide(s) ½ mk	✓ To 2ml of the solution W (in a test tube) add 2ml of Benedict's solution; [food substance and Benedict's solution used must be the Equal proportion] Heat to boil/ Accept Place in a hot water bath ✓<u>Reject:</u> Benedict ✓/ benedict's/ Benedict's only. <u>Note:</u> ✓Procedure must be correct, all the way✓ Quantities used- ratio of 1:1 1mk	<i>Blue colour persist;</i> 1mk	<i>Reducing sugars</i> <i>Absent</i> ✓ ½ mk

Food test	Procedure	Observation	Conclusion
<i>Starch</i>	To the(drops /2ml/1ml)of solution W in a test tube ,Add drops iodine solution <i>Reject ,iodine only</i>	<i>Blue black colour</i> <i>Reject any other colour,</i> <i>Accept black</i>	<i>Starch present</i>

6mks

b) Label three test tubes as A, B and C. Place 3ml of Solution W into each test tube. Divide solid Q into three equal portions.

To the test tube A, add one portion of solid Q and shake thoroughly

To the test tube B, add the second portion of Solid Q shake thoroughly and boil for five minutes.

To the test tube C, add the third portion of solid Q, followed by about 8 drops of 2M hydrochloric acid.

Place the three set ups into a water bath maintained at 37 °c for **40 minutes**.

Add equal amounts of benedict's solution to each of three test tubes and boil. Record your observation.

*Set up A Orange colour (accept blue-green-yellow-brown/orange ;)
1mk*

B Blue colour 1mk

C Blue colour 1mk

Account for your observations above 3mks

Solid Q was an enzyme Hydrolyzed/breakdown Starch into sugars/Glucose in A;

In test tube B Boiling denatured the enzyme hence starch was not hydrolyzed;

In test tube C Starch was not hydrolyzed, Acidic pH denatured the enzyme;

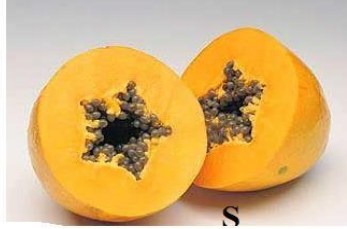
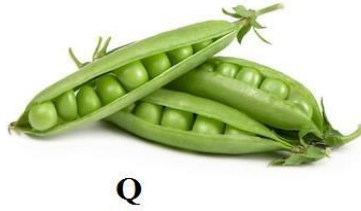
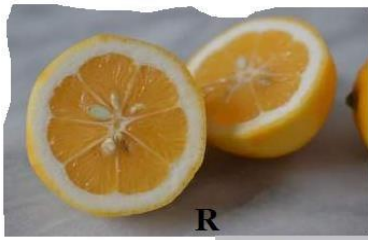
c) Name any other factors that affect reactions above. (1mk)

Substrate concentration; Inhibition; Coenzyme; and co-Factor;

d) Give a reason why temperature of the water bath was maintained at 37° C (2mks)

To provide Optimum/suitable temperature for enzyme reaction;

2. The photographs labelled **Q, R** and **S** are sections of some plant parts.



(i) Name the type of placentation in the specimens shown in photographs **Q**, **R** and **S** With reasons (6mks)

Q *Marginal (placentation); - Placenta running longitudinally with seeds in a single line;*

R *Axile/ central (placentation) –Placenta centrally placed/ presence of loculi/chambers;*

S *Parietal (placentation);-Ovary wall divided by placenta which is on ridges with many seeds attached;*

(ii) Giving a reason in each case, name the mode of dispersal of the specimen in photograph **Q** and **S** (4marks)

Q Mode *Self-dispersal /ejector/explosive;*

Reason *the pods contains lines of weakness/sutures;*

S Mode *Animal;*

Reason *Succulent /fleshy /brightly;*

coloured. Any 1mk

iii) What type of fruit is **R** .Give a reason (2mks).

Berry:

Reason: *-Has a centrally placed placenta;*

-Has many seeds;

-Presence of loculi (with juicy sacs); accept one

iii) *Diagram of an orange fruit with at least 4 well labelled parts (2 marks)*

3. (a) **Class** - *Dicotyledonae*

(1 mk)

Reasons

- Floral parts in fives /multiples of five/five stigma/five petals/five sepals;
- Leaf has (compact) petiole;
- Leaf broad; with network venation;

Mark any two correct

(b)

A – Style;

E- Filament;

F- Petal; reject plural

(c) Large /conspicuous/ brightly colored petals-to attract insect/ birds/ pollinators;

(d) The sepals as G ; Reject if label not in the photograph;

(e) C;

(f) Magnification = Length of leaf in the photograph from X to Y

Actual length

= 3.3cm;
1.1cm

x=3;