END OF TERM TWO EXAM

FORM 3 BIOLOGY P3

231/3 MARKING SCHEME

1. You are provided with:-

 - Soaked maize grains

 - A piece of liver

Using pestle, mortar and sand, grind maize grains into a soft pulp. Add 10ml of distilled water. Mix thoroughly then filter into a test tube and label it A. Repeat the procedure for a piece of liver and put the filtrate into test tube B.

Follow the procedure and complete table 1 below.

a) (i) Table 1 (2 mks)

|  |  |
| --- | --- |
|  | Observation |
| Add 2ml of hydrogen peroxide into 1ml of filtrate A | in A effervescence;acc, few bubbles of gas   |
| Add 2ml of hydrogen peroxide into 1ml of filtrate B | In B vigorous effervescence;acc, many bubbles of gas  |

 (ii) Comment on your results (4 mks)

Presence of catalase enzymes in living tissues; which breakdown toxic hydrogen peroxide into water and carbon (iv) oxide higher concentration of catalase in liver than maize grains; due to high metabolism in the liver;

 b) Using the reagents provided, test for the food substance in filtrate A. (6mks)

|  |  |  |  |
| --- | --- | --- | --- |
| **Food tested** | **Procedure**  | **Observation**  | **Conclusion**  |
| **Proteins:** | take 2cm3 of the filtrate in aTtest tube add equal amount of NaoH, followed by Cuso4;drop wise and shake; | mixture remains green | Proteins absentRej absence of reducing sugars |
| Reducing sugar;  | take 2cm3 of the filtrate in a Test tube; add equal amount of Benedict solution and heat gently; | green , yellow, orange, brown, red colouration; | Reducing sugar presentNb: conclusion tied to colour observedRej presence of reducing sugars |

State the importance of carbohydrates in the human body (1mk)

 Used for energy production (through respiration)

1. Study the diagrams of fruits below

 

a) Name the type of fruit shown by P and Q (2mks)

P- Succulent acc Drupe rej succulent fruit

Q- Dry Acc Legume rej dry fruit

b) State the type of dispersion used by fruit M, K and N. Give adaptation for each of them (6mks)

M- wind dispersion

K-Animal dispersion

N- Self explosion acc explosive mechanism

d) State the type of placentation shown by diagram Q and L (2mk)

Q- Marginal

L- Axile

e) State the significance of fruit and seed dispersal (1mk)

* Prevents overcrowding which leads to competition of resources
* Ensures that seeds reach new environments which may be more suitable for their growth.

Any of the answer scores a full mark

f) Describe the main differences between entomophilous flowers and anemophilous flowers (3mk)

|  |  |
| --- | --- |
| Entomophilous/insect pollinated | Anemophilous/ wind pollinated |
| * Large flowers
* Conspicuous with bright petals
* Scented with nectar
* Anthers small and firmly attached tom filament
* Large pollen grains which are sticky
* Stigmas are small sticky and occur inside the flower
 | Small flowersInconspicuous petalsNot scented and lack nectarAnthers large and loosely attached to a flexible filamentSmall pollen grains which are smooth and lightStigmas are long feathery and hang outside the flower |

Any first 3 each to score 1 mark

1. The diagram below shows a photomicrograph of a transverse section of a young cowpea stem.

K

Z

M

L

Q



1. Name the structures labelled K, L and Q. (3 mks)

K- Epidermis

L- Cortex

Q- Pith

1. State the functions of each of the parts labelled Z and M. (2 mks)

Z- Translocation of manufactured food

M- Responsible for secondary growth

1. The magnification of the photomicrograph is X50. Determine the actual diameter of the section in micrometers. (Show your working) (3 mks)

Magnification=drawing diameter

 Actual length

 5cm

 50

 = 0.1CM

 0.1x1000= 100um

1. a) State how the functioning of the phloem tissue is affected if the companion cell is destroyed. (1mk)

Translocation will be impaired

b) Give a reason for your answer in iv (a) above. (2mk)

Companion cells have mitochondria; which are involved in energy production, the energy is involved for translocation of manufactured food;

1. In what ways is the drooping of leaves observed on hot days advantageous to the plant? (2mks)

It reduces the surface area exposed for respiration; this helps to conserve water in the leaves;