Name…………………………………………………………..Adm No……..

Class…………

231/3

BIOLOGY

**PAPER 3**

**PRACTICAL**

**April 2023**

**Time: 1 Hour 45 minutes**

**MEC’S JOINT EVALUTION TEST**

**Marking scheme**

**INSTRUCTIONS TO CANDIDATES**

- Write your name and index number in the spaces provided

- Answer all questions in the spaces provided in the question paper.

- You are required to spend the first 15 minutes of the first hours allowed for this paper reading the whole paper before commencing your work.

- Answers MUST be written on the spaces provided after each question.

- Candidates may be penalized for recording irrelevant information and incorrect spelling especially of technical terms.

**FOR EXAMINERS USE ONLY**

|  |  |  |
| --- | --- | --- |
| **QUESTION** | **Max Score** | **Candidate Score** |
| 1 | 19 |  |
| 2 | 12 |  |
| 3 | 09 |  |
| **TOTAL SCORE** | 40 |  |

*This paper consists of 6 printed pages.*

*Candidates should check the question paper to ensure that all pages are printed as indicated*

**Residue**

|  |  |  |  |
| --- | --- | --- | --- |
| **Food substance tested** | **Procedure** | **Observation** | **Conclusion** |
| Reducing sugars | To 2ml of M, add 2ml/drops of Benedict’s solution and heat/warm to boil | Colour changes from blue to green / yellow | Traces /average Reducing sugar present |
| Proteins | To 2ml of M, add 4 ml/drops 10% sodium hydroxide; add 1% copper sulphate dropwise shaking after each drop | Colour changes to purple/ violet | Protein present |
|  Vitamin C |  To the 2ml of DCPIP into a test tube , Add drops of the residue and shake after every drop |  Blue colour remains | Vitamin C absent |

**b) Filtrate**

|  |  |  |  |
| --- | --- | --- | --- |
| **Food being tested** | **Procedure** | **Observation** | **Conclusion** |
| Reducing sugars | To 2ml of M add 2ml of Benedict’s solution and heat/warm to boil | Colour changes from blue to green to yellow and finally orange |  A lot of Reducing sugar present; |
| Proteins | To 2ml of M, add 4 ml 10% sodium hydroxide; add 1% copper sulphate dropwise shaking after each drop | Blue colour remain/Colour changes to light/pale purple violet | Protein absent or Accept Traces of protein |
| Vitamin C | To the 2ml of DCPIP into a test tube , Add drops of the residue and shake after every drop | DCPIP decolourized | Vitamin C present |

- Procedure marked once only for first table; 1mk each for procedure, observation conclusion Total 15marks

c) Account for the observation in( a) and (b)above. (2mks)

Reducing sugars and vitamin c are molecules of small size ; hence diffused through the small pores of filter paper. /Proteins are particles of large molecular size ; hence they could not pass through the small pores of filter paper.

d) The physiological process demonstrated above occurs in all living things. Name two important processes in animals that depend on it. (2mks)

Excretion/Reabsorption in the nephron

Absorption of digested food materials

Predation, Fertilization

 2. (c) You are provided with specimen R and S

a)(i) Give a reason why both R and S are fruits. (1mk)

 Both have two scars;

 They have Pericarp

ii) Why is R also a seed? (1mk)

*Have an Embryo/Cotyledon /Endosperm*

(iii) Tabulate any two differences between specimen R and S (2mks)

|  |  |
| --- | --- |
|  R |  S  |
| Dry/Lack fleshy/ juicy/ succulent pericarp | Has fleshy/succulent/juicy pericarp |
| Its white/cream in colour | Its orange in colour |
| Lack scent |  scented; |
| Has no remains of sepal | Has remains of sepal |

**b)**

**i)Diagram/ drawing**: no shading/ drawn with free hand and **not** using geometric instruments, continuous, double outline of epicarp, juice bags, seed/ no openings penalize 1 mark for diagram

**Reject**: if exocarp drawn as single line or dots, Transverse section, Mesocarp extending into endocarp, Seed attached onto placenta (rather than on the hollow at the centre of the fruit) **1 mark**

**Labelling**: plain lines (and **not** arrows)/ label line touching the structure. If not, encircle/ check for singular and plural. **Reject:** Pericarp - cancels all marks except for

Seed and placenta. Award maximum of 2mks ; penalize 1 mark for any wrong labelling to a maximum of 2.

[Award a maximum of **4marks**]

**Magnification. Award 1 mark**

**Drawing 1mk**

**Labelling 1mk**

**Proportionality (**Endocarp about 4 times thickness of exocarp) **(1mk**

(ii) Name the type of placentation in S .Reason (2mks)

 Axile, Placenta centrally placed

iii) What is the likely agent of dispersal? Reason (2mk

Animal; Its fleshy/succulent/juicy ; scented; to attract the animal

3. The photograph below is of mammalian organ

 

1. i. Name the basic functional units of the organ. Nephron (1mk)

ii) State any function of the organ above. Excretion; Regulation of body pH, Osmoregulation; Ion balance (1mk)

b) Name the parts labelled- A Medulla

 B Cortex

 C Ureter (3mks)

c) How is the blood vessel E adapted its function. (2mks)

* Has a Narrow lumen to maintain high pressure of blood
* Has thick elastic muscular wall to resist blood pressure and prevent bursting.

d) Give two differences between blood flowing through vessel E and D (2mks)

|  |  |
| --- | --- |
| **Blood in E** |  **Blood in D** |
| 1. Is under high pressure
 | Blood under low pressure |
| 1. Blood rich in Nitrogenous waste eg Urea,
2. Rich in oxygen
 | Has less amount of UreaHas less oxygen |