

2024 SHS2 END OF SEMESTER EXAMS – BIOLOGY 2 SOLUTION

BIOLOGY

PAPER 2

(a). Explaining each term;

i. Prokaryotic cell

Is a **cell** that lacks nucleus/ membrane bound nucleus and organelles 2mks
eg bacterium/bacteria cell 1mk

ii. Eukaryotic cell

Is a **cell** that has nucleus/ membrane nucleus and organelles 2mks
Eg. Plant cell/ animal cell/ fungi cell/ algae cell any 1x1 = 1mk

iii. Eukaryote

Eukaryote is an **organism** that has nucleus/ membrane bound nucleus and organelles = 2mks
Examples; plants, animals , fungi, algae any 1x1 = 1mk

Subtotal = 9mks

(b). i. Explaining the term 'tissue'

Is a group of cells similar in shape and size that preform the same function = **2mks**

a. examples of tissues in plants

- Parenchyma tissue
- Sclerenchyma
- Collenchyma
- Photosynthetic tissue
- Xylem
- Phloem etc

any 3x3 = 3mks

β. examples of animal tissues

- Epithelial
- Muscle
- Nerve
- Bone
- Blood
- Cartilage etc

any 3x3 = 3mks

ii forming the levels of organization

either III paramecium → **IV** hydra → **I** mango leaf, → **IV** spider

or **1mk** **1mk** **1mk**

III paramecium → **IV** hydra → **II** onion → **IV** spider

, **1mk** **1mk** **1mk** = **3mks**

Total = 20mks

1. (a). i. **distinguishing between the terms; organelle and an organ**

Organelle is a minute membrane bound structure (1) in a cell that performs specific function
whilst(1) organ is a group of tissues(1) working together to perform specific function =

3mks

ii. Giving the **shapes** of each organelle

- | | | | | |
|----|-------------|---|-------------|------------------------|
| a. | Chloroplast | - | oval/ egg | |
| β. | Golgi body | - | flat | |
| γ. | Lysosome | - | spherical | |
| δ. | Centriole | - | cylindrical | 1mk each = 4mks |

(b) i. **defining the term cell**

Cell is the basic unit of structure and function of an organism = 2mks

iii. Explaining **briefly** how the scientists contributed to cell discovery

a. Robert Hooke

- Observed cork of oak tree with primitive microscope
- He saw small rooms called cellular
- He saw cork cell
- Cells were dead
- First to see a cell
- Wrote a book micrographia in 1665

any 2x1 = 2mks

β. Antonie van Leeuwenhoek

- **First** to observe living cell
- **Using** a powerful microscope he made
- He observed bacteria and protozoans
- He described them as *animalcule*
- Wrote the book called systemic naturae

any 2x1 = 2mks

γ. Matthias Schleiden

- He observed different parts of plants such as
- Flowers, fruits, stem roots etc
- He saw that they were made of cells
- He drew conclusion that plants are made of cell
- He discovered plants cell

any 2x1 = 2mks

(c)

i. **features that make Amoeba able to survive in its habitat.**

- Presence of pseudopodium for feeding
- Forms pseudopodium to locomote and escape danger
- Forms cyst to protect itself from harsh weather condition
- Large surface area to volume ratio for respiration

any 3x1 = 3mks

ii. **advantages of Amoeba at the cellular level to a Frog**

- Requires less food to survive
- Need no special organs for existence
- Decrease in metabolic rate

any 2x1 = .2mks

Total = 20kms

2. (a.) i. **defining the term *nutrition***

Is the process by which living things/ organisms obtain food = 2mks

ii. **describing the organisms**

k. Carnivorous plants

they are plants that feed on the flesh of animals = 2mks

examples

- Sundew
- Pitcher
- Venus fly – trap
- Bladderwort

any 1x1 = 1mk

l. Decomposers

they are organisms that **breakdown** and **recycle** organic matter = 2mks

examples

- **Bacteria**
- **Fungi**
-

any 1x1 = 1mk

m. Scavengers

they are organisms that feed on **dead organism** (dead bodies of animals) = 2mks

examples

- Vulture
- Hyena
- Crow
- Flies
- Ants
- Beetles etc

any 1x1 = 1mk

p. Detritivores

They are organisms that feed on decomposing or decomposed organic matter = 2mks

Examples

- **Earthworm**
- **Millipede**
- **Termites**
- **Carpenter ants**

any 1x1 = 1mk

q. Carrions

They are organisms that feed on corpse of human being = 2mks

Examples

- Vulture
- Crow
- Hyaena
- Flies
- Ants

any 1x1 = 1mk

Total = 15mks

Part 2

[30mks]

Answer **all** questions

3. (a) naming the **kingdoms**

I virus - no kingdom

IX cactus - plantae

II euglena - protocista

X bacteria - monera / prokaryotae

III Rhizopus - fungi

IV moss - planyae

V spirogyra - protocista

VI crabs - animalia

VII Hydra - animalia

VIII pawpaw seed - plantae

0.5mk each = 5mks

(c) i. explaining the term **binomial system of nomenclature**

it refers to **Linnaeus system of classification in which every organism is given two**

- part latin names

2mks

ii. writing the **species**

α. Mango - indica

β. Domestic dog - familiaris.

1mk each =

2mks

ci. types of

iii. *epithelial* tissues in animals

- columnal epithelial
- ciliated epithelial
- squamus
- cylindrical
- stratified epithelial
- cubical epithelial

any 4x1 =

4mks

iv. examples of **proteins** synthesized in the body of man

- Fibrinogen
- Keratin
- Myosin
- Albumen
- Collagen
- Globulin

any 2x1

= 2mks