

IGCSE Biology P2 V3 Key

Objective Portion

Total: 25

1. C
2. B
3. D
4. A
5. D
6. B
7. A
8. D
9. C
10. B
11. C
12. D
13. B
14. A
15. B
16. B
17. B
18. C
19. D
20. A
21. A
22. B
23. C
24. B
25. C

Theoretical Portion

Marks: 45

1.

(i) The process involves

- Immunization of mice
- Selection of mice with high antibody production
- Myeloma cells preparation
- Myeloma and immune spleen cell fusion
- Cloning of hybridoma cell

(ii)

- Mitochondria: Responsible for generating ATP.
- Cytoplasm: Hosts glycolysis and facilitates fermentation that produces ATP in anaerobic conditions.

(iii)

The bison population relies on primary producers, impacting other herbivores. The deer population relies on herbs. Neanderthals are top predators that influence both bison and deer populations through their hunting behavior.

2.

(i)

- Increases metabolic rate to generate heat.
- Induces vasoconstriction to minimize heat loss.
- Accelerates heart rate to help in temperature regulation.
- Dilates pupils for better vision.

(ii) By saturating the ethanol with enzyme binding sites, it slows methanol metabolism, and prevents its conversion into toxic metabolites, making it a life-saving measure for methanol poisoning.

(iii) By transpiration pull, capillary action, root pressure, cohesion, and adhesion.

3.

(i) All statements relate to type 1 diabetes.

(ii) When body temperature rises, thermoreceptors send signals to the brain to activate cooling mechanisms.

(iii) Patient's blood passes through one side and dialysis solution containing waste products and excess ions passes through the other side of a semi-permeable membrane, aiding kidney function.

4.

(i)

Mitosis	Meiosis
Identical cells are produced, with the same chromosome number	Non-identical cells are produced, with half the number of chromosomes in the parent cell.
One round of cell division	Two rounds of cell division
Essential for growth and repair	Essential for sexual reproduction

(ii) A: Dendrites

Functions: Receive, integrate, and transmit chemical signals.

B: Nucleus

Functions: Stores DNA, vital for maintenance, growth, and functions related to the nervous system.

Practical Portion

Marks 30

1.

(i) -4.9%

(ii) Advantages include comparison of salt concentrations, measurement standardization, and sensitivity to water movements.

(iii)

- Prepare agar plates inoculated with bacterial cultures.
- Soak paper discs in antiseptics and antibiotics then place soaked discs onto the agar surface.
- Incubate plates for bacterial growth.
- Measure inhibition zones and compare their sizes, to determine the impact of antiseptics and antibiotics on bacterial growth.

2.

(i) Adenine= 20%, Cytosine= 40%

(ii)

- **CO₂ Concentration:** Conduct experiments with different CO₂ levels to measure the photosynthesis rate.
- **Temperature:** Conduct experiments at different temperatures to measure the rate of photosynthesis at each temperature.
- **Light Intensity:** Conduct experiments with different light intensities to measure the rate of photosynthesis.

(iii)

- Place the quadrat and count clover plants within it.
- Conduct representative sampling.
- Calculate the average number of plants per quadrat and the total number by multiplying by the number of quadrats.
- Analyze the data to draw conclusions considering factors like soil composition and light.