

IGCSE Biology P1 V3 Key

Objective section

Marks: 25

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

THEORETICAL PORTION

Marks: 45

1.

(i)

- Progesterone maintains the uterine lining during the menstrual cycle and thickens it to prepare for pregnancy.
- Its level rises after ovulation for embryo implantation and its level drops if fertilization doesn't occur leading to menstruation.

(ii)

Testosterone improves athletic performance by increasing muscle mass, strength, bone density, and oxygen delivery to muscles. It promotes motivation and aggression to improve athletic performance.

(iii)

Adrenal glands.

(iv)

Synthetic estrogen, typically ethinyl estradiol.

2.

(i)

Monoclonal antibodies bind to cancer cells and reduce damage and side effects to healthy tissues. They have:

- low toxicity
- enhanced specificity
- immunotherapeutic potential

(ii)

Hybridoma cells

(iii)

- a. Physical Exercise
- b. Neurotrophic Factors (brain-derived neurotrophic factor)

3.

(i)

Blood on the Left Side	Blood on the Right Side
Oxygenated blood	Deoxygenated blood
Thick muscular walls	Thin muscular walls
Requires more pressure to pump blood	Requires less pressure to pump blood

(ii)

A. Mitochondria

(iii)

- Isolation of spleen cells from the mouse and fusion with myeloma cells.
- Cloning and culturing the selected hybridoma cells.

- Purification of monoclonal antibodies.
- Formulation of antibodies for injection.

4.

(i)

E. Cortex

F. Medulla

G. Ureter

(ii)

In the presence of a poison inhibiting respiration, the ATP-producing ability of plants is compromised which reduces the efficiency of active transport mechanisms. Consequently, ion absorption becomes limited despite water uptake being passive.

(iii)

It undergoes plasmolysis where water exits the cell through osmosis. Hence, the cell membrane detaches from the cell wall, preventing cell burst to structural integrity.

(iv)

Bacteria	Virus
Complex cells with organelles e.g. ribosomes, cell walls, genetic material (DNA or RNA), etc.	Lack cellular structures and are composed of genetic material (DNA or RNA)
Large size about 0.2 to 8 micrometers	Small size about 20 to 400 nanometers

Practical Portion

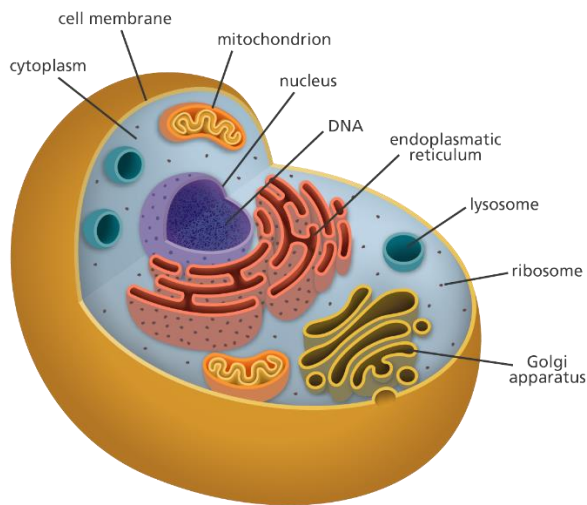
Marks: 30

1.

(a)

37°C is chosen because of the optimal body temperature of mammals, including humans. Crucial for growth and replication of bacterial cells used in experiments. It stimulates physiological conditions, ensuring that the experimental results are relevant to biological systems.

(b)



2.

(a)

- (i) Place a thistle funnel between two solutions of different concentrations. Measure the change in solution level over time to observe the direction and rate of osmosis.
- (ii) An osmometer measures the osmotic pressure of a solution by immersing a semipermeable membrane in the solution to measure the pressure.
- (iii) Visking tubing allows the passage of water but not larger solute molecules. Place solutions of different concentrations inside and outside the tubing, to measure the movement and changes in water potential.
- (iv) Place potato slices in solutions of different concentrations to measure changes in mass or volume. It determines the direction and magnitude of osmotic movement across the cell membrane.

(b)

- Prepare a sample containing starch.
- Prepare iodine solution by mixing iodine crystals in potassium iodide.
- Apply a few drops of iodine solution to the sample.
- Observe any color change. The blue-black color indicates the presence of starch.
- Record the result.