

Candidate Name

Candidate Number

Centre Name

Centre Number

Paper 1:

Model Paper V2 Marking Scheme

(2 hours)

It is necessary to respond on the answer sheets provided alongside this question paper. Additionally, you must have a soft pencil (preferably of type B or HB), a clean eraser and a dark blue or black pen.

INSTRUCTIONS:

- You must write your name, candidate number, centre name and centre number on the answer sheets in the designated spaces.
- Objective section consists of 25 questions, and it is essential that you attempt all of them.
- Each question has four options labelled A, B, C, and D. Select the option that you think is correct. Mark it on the multiple-choice answer sheet using a soft pencil.
- Attempt all the questions from subjective section using a dark blue or black pen.
- It is important to follow the instructions provided on the answer sheets.
- Do not use correction fluid.
- Avoid writing on any bar codes.

INFORMATION:

- This paper has a total of 100 marks.
- In objective section there are 25 questions, each carries one mark. There is no negative marking for incorrect responses.
- In subjective section, 45 marks are for extended theory and 30 marks for practical component.
- The number of marks assigned for every question or its parts is indicated within brackets [].

OBJECTIVES PORTION:

[Total 25 marks]

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

THEORY PORTION:

[Total 45 marks]

1.

(i)

- Genes are transcribed into mRNA, which undergoes modifications like the removal of intron.
- The mRNA moves to the cytoplasm, where ribosomes translate it.
- tRNA molecules deliver amino acids to link into a chain, which then folds and acts as an antigen.
- In pathogens, gene sequences determine antigen structure, affecting immune response.

(ii)

- | | | |
|------------------------|-----------------------|-----------------------|
| • Loss of Biodiversity | • Water Cycle | • Increased Wildfires |
| • Soil Erosion | • Disruption | • Altered Climate |
| | • Loss of Carbon Sink | |

(iii)

Memory cells ensure a stronger and quicker immune response. They provide long-term protection against diseases hence reducing illness.

2.

(i)

Bees collect nectar as a source of energy for themselves and their colony.

(ii)

Mitosis	Meiosis
Produces two daughter cells with the same number of chromosomes	Produces four daughter cells with half the number of chromosomes
Occurs in somatic cells	Occurs in germ cells
One round of cell division	Two rounds (meiosis I and meiosis II)
Diploid cells produced	Haploid cells produced
No crossing over	Crossing over between homologous chromosomes

3.

(i)

Cloning by Dolly the sheep, involves somatic cell nuclear transfer (SCNT).

- Somatic cells are isolated.
- Egg cells are taken from a donor and nuclei are removed.
- This nucleus is inserted into the enucleated egg cell and the embryo is implanted in a mother.
- The developed clone is genetically identical to the donor animal.

(ii)

- | | |
|----------------------|----------------------|
| • Diagnostic Tests | • Disease Monitoring |
| • Imaging Techniques | • Rapid Tests |

(iii)

- Clot Formation
- Release of Clotting Factors
- Wound Healing

Warfarin poisoning: warfarin inhibits the activity of clotting factors, causing impaired blood clotting and enhancing uncontrolled bleeding.

4.

(i)

Erythromycin capsules contain drug spheres with enteric coating. In the small intestine, the enteric coating dissolves, exposing the spheres. Water influx causes the release of drugs that diffuse into the intestinal fluid for absorption. This ensures effective drug delivery with fewer side effects.

(ii)

- Spines
- Thick, waxy skin
- Bitter or toxic compounds

(iii)

Chemical defense.

PRACTICAL PORTION:

[Total 30 marks]

1.

(i)

- **Limewater Test:** Add carbon dioxide into limewater and observe milky precipitates, indicating the presence of CO₂.
- **Hydrogen Carbonate Indicator Test:** Use a hydrogen carbonate indicator solution and introduce CO₂. Observe the pink color, indicating the presence of CO₂.
- No changes indicate the absence of CO₂.

(ii)

- Set up experiments with conditions.
- Record initial and final colors, and compare color changes.
- Analyze the rate and extent of color changes to conclude.

2.

(i)

- Preparation of agar plates.
- Incubate one plate at room temperature and another at a higher temperature.
- Comparison of their diffusion rates.

(ii)

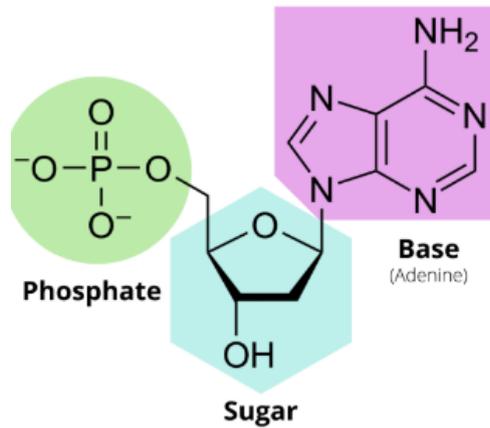
- Prepare agar plates, one with starch solution and another without.
- Place a drop of iodine solution on each plate.
- Comparison of the diffusion rates.

(iii)

- Preparation of agar plates.
- Add a chemical substance to one plate.
- Comparison of the diffusion rates.

3.

(i)



(ii)

Sterile forceps are used to handle the filter paper disc to prevent contamination and maintain experimental integrity.

(iii)

- Cigarettes, filter paper, glass jar, and tape are required.
- Attach filters to the container using tape.
- Allow smoke to pass through it.
- Examine discoloration.
- The presence of dark, sticky deposits indicates tar presence.