

DATE: 28th of October 2025

TIME: 9.30 am- 12.30 pm

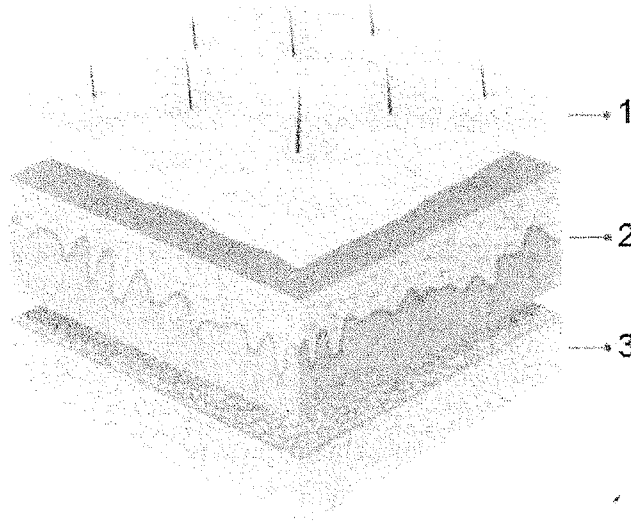
SECTION 2: STRUCTURED ESSAY QUESTIONS (60 MARKS)

Choose 04 out of the 06 questions given below and answer using the provided answer sheets

- 2.1 The hypothalamic-pituitary-adrenal (HPA) axis plays a major role in stress regulation, and neurotransmitter imbalances contribute to anxiety and depression.**
- a) Explain the biological processes involved in stress, focusing on the role of the hypothalamic-pituitary-adrenal (HPA) axis. (07 marks)
 - b) Describe how neurotransmitter imbalances contribute to the development of anxiety and depression. (08 Marks)
- 2.2 Hormonal regulation influences psychological processes through systems in the human body. Similarly, the systems in the human body influence biological processes.**
- a) Explain the role of the endocrine system and its connection to psychological processes. (09 Marks)
 - b) Describe how the cardiovascular system influences mental health. (06 Marks)
- 2.3 The organs of the body show an integrated relationship between physiological systems and mental well-being.**
- a) Describe the psychological functions of the brain and the heart, highlighting their roles in mental health. (10 Marks)
 - b) Explain how the thyroid and lungs influence psychological well-being. (05 Marks)
- 2.4 Mendelian genetics shapes how traits are inherited through the interaction between genotype and phenotype.**
- a) Explain Mendelian genetics with reference to genotype, phenotype, dominance, and recessiveness. (07 Marks)
 - b) Draw a diagram to indicate the structure of DNA, including how information is stored. (08 Marks)

2.5 The skin is the body's largest organ. Skin health is closely tied to physical and mental well-being as it can affect both self-esteem and quality of life.

- a) Identify the three main layers of the skin given in the diagram below and write their functions. (06 Marks)



- b) Describe the major functions of the skin and explain how they contribute to overall health. (09 Marks)

2.6 Sleep is a natural biological process that allows the body and mind to rest, recover, and restore energy. It supports memory, learning, emotional balance, and overall physical and mental health.

- a) Define micro-sleep, and when does it occur? (04 Marks)
- b) List the four main brain-wave types and the states they are associated with. (04 Marks)
- c) Discuss the role of brain structures and biological rhythms in regulating sleep. (07 Marks)

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