Bridging Exemption Test
Module Outline

Module: Biology

Overview:

Test questions on principles and concepts in biology covering topics of molecules of life, cell structure and function, genetic inheritance, population genetics, expression of biological information, mutation, and recombinant DNA technology. There are also questions on various biological processes which include cellular respiration, photosynthesis, gaseous exchange, transport system, homeostasis, coordination, and immunity.

Faculty / Programme Group:

- Civil
- Electrical and Biomedical
- Chemical and Energy
- Mechanical
- Science
- Architecture and Landscape
- Real Estate
- Land and Quantity Surveying
- Urban and Regional Planning
- Geoinformation
- Industrial Design

Topics Covered:

- Molecules of Life
  Water, Carbohydrates, Lipids, Proteins and Nucleic Acids.

- Cell Structure and Functions
  Prokaryotic and Eukaryotic Cells, Structure and Functions: Cell Membrane and Organelles

- Genetic Inheritance
  Monohybrid and Dihybrid inheritance, Deviation from Mendelian inheritance

- Population Genetic
  Gene Pool Concept, Hardy-Weinberg Law

- Expression of Biological Information
  DNA and Genetic information, DNA Replication, Protein Synthesis- Transcription and Translation

- Mutation
  Types and Classification

- Recombinant DNA technology
  Introduction, Methods in Gene Cloning, Application

- Cellular Respiration
  Cellular Respiration, Aerobic Respiration, Anaerobic Respiration: Fermentation and Its Application

- Photosynthesis
  An Overview of Photosynthesis, Absorption Spectrum of Photosynthetic Pigments, Light-Dependent & Light-Independent Reaction, Alternative Mechanisms of Carbon Dioxide Fixation

- Gaseous Exchange and Its Control
  Gaseous Exchange and Control in Mammals, Role of Chemoreceptors in Controlling Breathing, Gaseous Exchange and Controls in Plants

- Transport System
  The Mammalian Heart and Its Regulation, Lymphatic System: Role in Transport, Transport in Plants

- Homeostasis
  Concept of Homeostasis, Negative Feedback Mechanism, Homeostatic Organ: Kidney

- Coordination
  Nervous System, Mechanism of Muscle Contraction, Hormones in Mammals & Plants

- Immunity
  Immune Response, Development of Immunity

Module Test Contents:

Format:

- Consists of two parts: (100 marks)
  Part A: Multiple Choice Questions (60 marks)
  Part B: Structured Questions (40 marks)

Duration:
3 hours

References:

1. Liew Shee Leong et al., (2018). Biology for Matriculation Semester 1. Oxford Fajar 5th Edition.
2. 2. Liew Shee Leong et al., (2018). Biology for Matriculation Semester 2. Oxford Fajar 5th Edition.
3. Reece, J. B., & Campbell, N. A. (2011). Campbell biology. Boston: Benjamin Cummings / Pearson.