



United International University

School of Science and Engineering

Final Examination; Year 2024; Trimester: Summer

Course: BIO 3105; Title: Biology for Engineers; Sec: BA, A, E

Full Marks: 50;

Time: 2 hrs

There are Six Questions, 1-4 mandatory to answer, and answer 5 or 6 (any one).

1. (a) Define immune attack. 2 CO1
(b) State the function of hypothalamus. 2 CO1
(c) State BMI and mention its value. 2 CO1
(d) Summarize the categories of ecosystems. 2 CO1
(e) Argue the reasons of having relatively less energy in tertiary consumers. 2 CO1
2. (a) Name the specific biological fields where you can give your input as a computer engineer. 4 CO2
(b) Verify that your height and weight correspond with your BMI. If not, clarify the upkeep procedure. 3 CO2
(c) For example, any pathogen invades our body. Justify how our defense mechanisms respond to protect us in this case. 3 CO2
3. (a) What should be the change in energy flow for a typical ecosystem where there are 3 levels of consumers? Show with the help of energy-time graph. 3 CO3
(b) Mention the tools of Biotechnology. Specify the recognition sequence and explain the mode of action of the restriction enzyme, EcoRI with illustration. 3 CO3
(c) Discuss the significances of having both positive and negative feedback in our homeostasis control. Give proper reasons behind your answers. 4 CO3
4. (a) Explain the reasons for increased rate of noncommunicable diseases (NCDs) in our country with examples. Name some of the noncommunicable diseases. Design a lifestyle to prevent those diseases focusing on the dietary ingredients that should be taken into account for. 4 CO4
(b) Do you think we need a protocol to monitor biopiracy? Explain some basic points that you think we should include in the protocol. 3 CO4
(c) Mention the basic differences between food web and food chain? 3 CO3
5. (a) Explain the relationship of vaccination with primary and secondary response. 5 CO4
(b) Talk about the amounts of each food group in a balanced diet. Relate eating patterns to emotional stress. 5 CO4
6. (a) What is polymerase chain reaction (PCR)? Describe the steps of a PCR with the pictorial view including polarities for DNA. 5 CO3
(b) Let's say you sweat excessively and feel extremely hot. Examine how your body modifies itself through homeostatic regulation. 5 CO3

CO1: Describe different biological quantities.

CO2: Apply the knowledge of biological systems in a real-life problem.

CO3: Design several biological systems with constraints.

CO4: Explain several procedures for solving biological systems within constraints.