Bihar Engineering University, Patna
End Semester Examination - 2022

Course: B.Tech. | *Semester: VII* | *Time: 03 Hours*
Code: 100708 | *Subject: BIOLOGY FOR ENGINEERS* | *Full Marks: 70*

Instructions:-

(i) The marks are indicated in the right-hand margin.
*(ii) There are **NINE** questions in this paper.*
*(iii) Attempt **FIVE** questions in all.*
(iv) Question No. 1 is compulsory.

Q.1 Choose the correct answer of the following (any seven Question): **[2 x 7 = 14]**

(a) Denaturation of protein involves breaking of several bonds except:
(i) Electrostatic bond
(ii) Disulfide bond
(iii) Hydrogen bond
(iv) Peptide bond

(b) Name the process of gaseous exchange in the body?
(i) Lymphatic System
(ii) Respiration
(iii) Cardiovascular System
(iv) Reproduction

(c) 'ABO' system of blood measures the
(i) protein
(ii) sugar
(iii) antibody
(iv) antigen

(d) Which of the following is protein hormone?
(i) Oxytocin
(ii) Insulin
(iii) TSH
(iv) Antidiuretic Hormone

(e) The term 'biology' was introduced by
(i) Lamarck and Traviranus
(ii) Drawin
(iii) John Ray
(iv) Aristotle

(f) An organism carrying two identical alleles is
(i) recessive
(ii) heterozygous
(iii) homozygous
(iv) dominant

(g) Which enzyme join DNA molecules together?
(i) Polymerase
(ii) Nucleases
(iii) Ligases
(iv) Linkers

P.T.O.

(h) Exception to Mendal's law of genetics is / are
(i) Linkage
(ii) Pleiotropism
(iii) Polyploidy
(iv) All of the above

(i) The longest part of the cell cycle is
(i) prophase
(ii) metaphase
(iii) interphase
(iv) telophase

(j) COVID-19 (Coronavirus) contains genetic material as
(i) Single stranded DNA
(ii) Double stranded RNA
(iii) Single stranded RNA
(iv) Double stranded DNA

Q.2 (a) Distinguish between Meiosis and Motisis? Describe Mendel's Law. **[7]**
(b) Describe the mechanism of mitosis cell division. **[7]**

Q.3 (a) What do you mean by Respiration? Explain the types of Respiration. **[7]**
(b) Differentiate between autotroph and heterotroph organisms. **[7]**

Q.4 (a) Write in brief properties and examples of all three major kingdoms of life. **[7]**
(b) What is glycolysis? Draw the flow diagram of different stages of glycolysis showing preparatory and payoff phase. **[7]**

Q.5 (a) Explain the structure of DNA in details. **[7]**
(b) Differentiate between gene interaction and epistasis. **[7]**

Q.6 (a) Define metabolism and differentiate between endergonic and exergonic reaction. **[7]**
(b) What is the difference between unicellular and multi-cellular organisms? **[7]**

Q.7 Draw a well-labelled diagram of animal and plant cell and list specific functions of each cell organ. **[14]**

Q.8 (a) Explain hierarchy of DNA structure for monomeric nucleotide to double helical polymeric form associated with histone proteins of nucleosome. **[7]**
(b) Draw the Krebs / TCA Cycle diagram and mark the net source and total number of ATP generated in Krebs/TCA cycle. **[7]**

Q.9 What is modern biology ? Distinguish between traditional and modern biology. **[14]**