

**B.Tech 7th Semester Exam., 2021**

( New Course )

**BIOLOGY FOR ENGINEERS**

Time : 3 hours

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.

1. Choose the correct answer of the following  
(any seven) :  $2 \times 7 = 14$

Q (a) The digestive system of the cell is known as

- (i) lysosome
- (ii) chloroplast
- (iii) ribosome
- (iv) Golgi body

(b) An organism carrying two identical alleles is

- (i) recessive
- (ii) heterozygous
- (iii) homozygous
- (iv) dominant

(c) Which allows the body to produce vitamin D?

- (i) Calcium
- (ii) Cholesterol
- (iii) Steroid
- (iv) Acetone

(d) The longest part of the cell cycle is

- (i) prophase
- (ii) metaphase
- (iii) interphase
- (iv) telophase

(e) 'ABO' system of blood measures the

- (i) protein
- (ii) sugar
- (iii) antibody
- (iv) antigen

(f) Study of birds is called

- (i) haematology
- (ii) ornithology
- (iii) saurology
- (iv) rhinology

(g) The term 'biology' was introduced by

- (i) Lamarck and Traviramus
- (ii) Darwin
- (iii) John Ray
- (iv) Aristotle

(h) Gases have

- (i) low density
- (ii) ductility
- (iii) brutality
- (iv) high density

(i) Movement of particles in liquids and gases is observed as

- (i) Bruneian motion
- (ii) Brownian motion
- (iii) Blackian motion
- (iv) Randomium motion

(j) Thermodynamics does not consider

- (i) initial and final state
- (ii) time factor
- (iii) bulk of matter
- (iv) energy change

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2. Write the answers in very brief :  $3\frac{1}{2} \times 4 = 14$

- (a) Write the basic working principle of data storage in human brain.
- (b) Define cell division.
- (c) Write the concepts of recessive and dominance of gene.
- (d) What are the basic properties of a model organism?

3. Write the answers in very brief :  $3\frac{1}{2} \times 4 = 14$

- (a) Write the difference between unicellular and multicellular organisms.
- (b) Differentiate between plant cell and animal cell. <https://www.akubihar.com>
- (c) List the laws of inheritance.
- (d) Define molecular taxonomy of living organism.

4. Write the answers in short :  $7 \times 2 = 14$

- (a) Write in brief properties and examples of all three major kingdoms of life.
- (b) Explain the mechanism of ammonia excretion from human body.

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5. Write the answers in short :  $7 \times 2 = 14$

- (a) Differentiate between autotroph and heterotroph organisms.
- (b) Write the comment on model organisms *C. elegans* and *A. thaliana*.

6. Write the answers in short :  $7 \times 2 = 14$

- (a) Discuss about discovery of 20th Century that leads to major investigation in animal science.
- (b) Describe the mechanism of mitosis cell division.

7. Write the answers in short :  $7 \times 2 = 14$

- (a) Discuss about law of dominance, law of segregation and law of independent assortment of Mendel.
- (b) Differentiate between gene interaction and epistasis.

8. Write the answer in very long : 14

Draw a well-labelled diagram of animal and plant cell and list specific functions of each cell organ.

9. Write the answer in very long : 14

What is modern biology? Distinguish between traditional and modern biology.

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