

**B.Tech 3rd Semester Exam., 2020
(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) : 2×7=14

- (a) The term 'biology' was introduced by
 - (i) Lamarck and Treviranus
 - (ii) Darwin
 - (iii) John Ray
 - (iv) Aristotle

(b) The time dependent permanent deformation is called

- (i) plastic deformation
- (ii) elastic deformation
- (iii) creep
- (iv) anelastic deformation

(c) Which of the following is not present in animal cells?

- (i) Cell walls
- (ii) Mitochondria
- (iii) Ribosomes
- (iv) Cytoplasm

(d) Normal human blood pressure is

- (i) 110/110
- (ii) 120/70
- (iii) 120/80
- (iv) 140/60

- (e) Which ancient Indian physician is known as the 'Father of Surgery'?
- (i) Charaka
 - (ii) Sushruta
 - (iii) Nagarjuna
 - (iv) Vagbhata
- (f) The existence of genes was first suggested by
- (i) Gregor Mendel
 - (ii) George Wells Beadle
 - (iii) Edward Lawrie Tatum
 - (iv) Frederick Griffith
- (g) Which of the following animals has the longest life span?
- (i) Tortoise
 - (ii) Elephant
 - (iii) Crocodile
 - (iv) Dog

- (h) Which of the following is the reason for orange colour of carrot?
- (i) It grows in the soil
 - (ii) It contains carotene
 - (iii) It is not exposed to sunlight
 - (iv) The entire plant is orange in colour
- (i) Rh factor of the blood was discovered by the scientist(s)
- (i) Louis Pasteur
 - (ii) Landsteiner and Wiener
 - (iii) Jansky
 - (iv) Moss
- (j) The suitable temperature to transport viral culture is
- (i) 30 °C
 - (ii) 5 °C
 - (iii) 25 °C
 - (iv) 45 °C

(5)

2. Write the answer in very brief of the following : $3\frac{1}{2}\times 4=14$
- (a) What is the working principle of human eye and digital camera?
 - (b) Define Mendel's laws.
 - (c) Classify about the types of sugars.
 - (d) How can you say that DNA is a genetic material?
3. Write the answer in very brief of the following : $3\frac{1}{2}\times 4=14$
- (a) List the properties of genetic code.
 - (b) Define the term of primary structure of protein.
 - (c) List the laws of thermodynamics.
 - (d) Write the examples of single-cell organism and multicellular organism.
4. Write the answer in short of the following : $7\times 2=14$
- (a) Differentiate between prokaryote and eukaryote organisms.
 - (b) What are recessive traits in living organism?

(6)

5. Write the answer in short of the following : $7\times 2=14$
- (a) Explain about Brownian motion.
 - (b) Write the parts of light microscope used for observation of cells.
6. Write the answer in short of the following : $7\times 2=14$
- (a) Discuss how biological discovery of 20th Century led to major investigation in medical science.
 - (b) Discuss about Mendel's laws of segregation and independent assortment.
7. Write the answer in short of the following : $7\times 2=14$
- (a) How can you say that proteins are transporters and receptors of a living cell?
 - (b) Differentiate between photosynthesis and transpiration in plant.

8. How can you prove that biology is an important scientific discipline similar to mathematics, physics and chemistry?
Answer in detail. 14
9. Draw the flow chart of Krebs cycle. 14
