



AUTUMN END SEMESTER EXAMINATION-2019

1st Semester B.Tech

BIOLOGY

LS1001

(For 2019 & 2018 Admitted Batches)

Time: 3 Hours

Full Marks: 50

Answer any SIX questions.

Question paper consists of four sections-A, B, C, D.

Section A is compulsory.

Attempt minimum one question each from Sections B, C, D.

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable and all parts of a question should be answered at one place only.

SECTION-A

1. Answer the following questions. [1 × 10]
- (a) Explain five kingdom classification proposed by Whittaker?
 - (b) Why are bacteria considered as necessary evil?
 - (c) Which organelles plays a major role during cell division?
 - (d) How is meiosis responsible for introducing variations in nature?
 - (e) What is the end product of fatty acid metabolism?
 - (f) How does alteration of ecosystem composition pose as a threat to diversity?
 - (g) What are the different kinds of bonds present in DNA?
 - (h) Explain intrinsic homeostasis with an example.

- (i) How is somatic cell nuclear transfer (SCNT) helpful in generation of stem cells?
- (j) Mention four properties of genetic code.

SECTION-B

- 2. (a) Explain catalytic power and thermodynamics of enzymes. How does enzyme concentration and temperature effect enzyme activity? [4]
- (b) Compare the action of reversible and irreversible inhibitors. What are the different mechanism of enzyme action and which mechanism does restriction endonuclease use for its action? [4]
- 3. (a) How is chromosome compacted in the nucleus? How are chromosome classified based on position of centromere? [4]
- (b) Explain the role of stroma and grana in photosynthesis. Write short notes of Calvin's cycle. [4]

SECTION-C

- 4. (a) Draw the structure of a nerve cell. Discuss the importance of sodium and potassium ions in transmission of nerve impulse. [4]
- (b) Elaborately explain the organization of central nervous system. Write short notes of dementia. [4]
- 5. (a) Explain the terms "primary lymphoid organs" and "immunological memory". What are the components of innate immune system? [4]
- (b) How does cell mediated immunity protect the body against different invading microorganisms? What [4]

would happen if our immune system does not work optimally?

6. (a) What is the difference between dynein and kinesin linear motors? How is F₀F₁ ATPase responsible in generating ATP in mitochondria? [4]
- (b) Explain the importance of ligand and receptors in regulating signal transduction. Explain the journey of signals from plasma membrane to target organelles. [4]

SECTION-D

7. (a) Elaborate the role of biological recognition element and transducer in biosensors. How are both the components applicable in a Glucose biosensor? [4]
- (b) Discuss the role of biosensors in disease detection and environmental monitoring. [4]
8. (a) Discuss how different types of microorganisms are helpful in mediating bioremediation. What are the different factors which contribute in making bioremediation a success? [4]
- (b) Elucidate two methods of ex-situ bioremediations. What are the hindrances that prevent the success of bioremediation? [4]
