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Roll No.

THIRD SEMESTER

B. Tech. (BT)

SUPPLEMENTARY EXAMINATION

February 2019

BT201 Introduction to Biotechnology (New scheme)

Time: 3:00 Hours

Max. Marks: 50

Note: Answer **ALL** questions. All questions carry equal marks.
Assume suitable missing data, if any.

- Q.1 [A] Attempt any TWO of the following [2½+2½]
- (i) Describe the following terms (a) Stem cells; (b) Nutraceuticals; (c) Reproductive cloning; (d) Bioremediation; (e) Biomineralization
 - (ii) Name any five Delhi-based institutes under CSIR working in the area of Biotechnology
 - (iii) Describe the contributions of following scientists: (a) Watson and Crick; (b) Griffith; (c) Chargaff; (d) Christian Gram; (e) Francis Crick
 - (iv) Describe the biochemistry involved in curd manufacture
- [B] Discuss in detail the applications of Biotechnology, five each in health and agriculture sectors [5]
- Q.2 [A] Attempt any TWO of the following [2½+2½]
- (i) Write in brief about the structure and function of any two of the following (a) Lysosome; (b) Bacterial flagella; (c) Centrosome; (d) Actin filaments; (e) Nucleoporins and their role
 - (ii) Write in brief about of the following characteristics of living organisms (a) Responsiveness; (b) Protoplasm; (c) Organ system; (d) Healing and regeneration; (e) Catabolism and anabolism
 - (iii) Write about any five of the following
 - (a) Confined localization of hydrogen peroxide
 - (b) Mitochondrial membrane system
 - (c) Semiautonomous organelles in eukaryotes
 - (d) Resistance and bacteriocinogenic plasmids

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- (e) Plant vacuole
(f) Principle of Gram staining
- [B] Describe in detail the structure, function and dynamics of plasma membrane [5]

Q.3 [A] Attempt any TWO of the following [2½+2½]

- (i) Differentiate between any two of the following
(a) Storage polysaccharide and Structural polysaccharide
(b) Polar amino acids and Nonpolar amino acids
(c) Aldose sugar and Ketose sugar
(d) Glycoproteins and Proteoglycans
- (ii) Write in brief about any one of the following
(a) Salient features of algae
(b) Chemical composition of DNA
- (iii) Describe the characteristic features of bacteria

[B] With respect to enzyme, write in brief about the following

- (i) Specificity
(ii) Classification [2½+2½]

Q.4 [A] Attempt any TWO of the following [2½+2½]

- (i) Write in brief about the following
(a) Restriction enzymes
(b) DNA ligase
(c) Properties of ideal cloning vector
(d) Catenation
(e) Prokaryotic promoter
- (ii) Describe the terms: (a) Monocistronic; (b) Exons; (c) Transpeptidation; (d) Hybrid state model for translocation; (e) Operon
- (iii) Give a descriptive account of Avery, McLeod and McCarty experiment

[B] Describe in detail the initiation phase of prokaryotic DNA replication explaining the functions of all the proteins/ enzymes involved [5]

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Q.5 [A] Attempt any TWO of the following [2½+2½]

- (i) Compare and contrast polyacrylamide gel electrophoresis and SDS-PAGE
- (ii) Describe the principle and procedure of ion exchange chromatography
- (iii) Explain the principle and procedure of differential centrifugation
- [B] Attempt any TWO of the following [2½+2½]
- (i) How is agarose gel electrophoresis employed for separation of DNA fragments of different sizes?
- (ii) Give the principle and procedure of isoelectric focussing
- (iii) Compare and contrast velocity sedimentation and equilibrium sedimentation

END