

B.Sc. (Part-II) Semester-IV Examination
BIOTECHNOLOGY
(Genetic Engineering and Microbial Biotechnology)

Time : Three Hours]

[Maximum Marks : 80

Note :—(1) All questions are compulsory.

(2) Draw the diagrams wherever necessary.

1. (a) Fill in the blanks :

- (i) Southern blotting is used for analysing _____.
- (ii) _____ is an antidiabetic protein hormone.
- (iii) Fungi involved in the synthesis of penicillin is _____.
- (iv) _____ ribosome is present in eukaryotes.

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(b) Choose a proper option :

(i) Enzyme involved in the joining of Okazaki fragment is :

- (a) Endonuclease
- (b) DNA Ligase
- (c) Helicase
- (d) SSB protein

(ii) Which is not a termination codon ?

- (a) UAA
- (b) AUG
- (c) UGA
- (d) UAG

(iii) PCR discovered by :

- (a) James Watson
- (b) Kary Mullis
- (c) Gamow
- (d) Crick

(iv) Gene code for β -galactosidase enzyme is :

- (a) Lac A
- (b) Lac Y
- (c) Lac Z
- (d) Regulator gene

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(c) Answer in **one** sentence :

- (i) What is PCR ?
- (ii) Define Plasmid.
- (iii) Define Transcription.
- (iv) What are codons ?

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2. Describe the following :

- (a) Holiday model of recombination.
- (b) Wobble Hypothesis.
- (c) Replication fork.

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OR

- (d) Sketch well labelled diagram of DNA helix.
- (e) DNA repair mechanism.
- (f) Characteristics of genetic code.

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3. Describe protein synthesis in Eukaryotes. 12
- OR**
- Describe Operon. Describe Lactose operon in detail. 12
4. Describe PCR and its applications in detail. 12
- OR**
- Describe construction of cDNA library in detail. 12
5. Describe :
- (a) Dextran. 4
 - (b) Insulin. 4
 - (c) Erythropoietin. 4
- OR**
- (d) Interferon. 4
 - (e) Recombinant vaccines. 4
 - (f) Amino acids. 4
6. Explain the following :
- (a) Batch fermentation. 4
 - (b) CSTR. 4
 - (c) Alcohol fermentation. 4
- OR**
- (d) Fluidised bed reactor. 4
 - (e) Continuous fermentation. 4
 - (f) Penicillin fermentation. 4
7. Describe :
- (a) Bioleaching. 4
 - (b) Rhizobium as biofertilizer. 4
 - (c) Anaerobic waste water treatment. 4
- OR**
- (d) Bioremediation. 4
 - (e) Biodiesel as source of energy. 4
 - (f) Bt toxin as microbial pesticide. 4