AP–484

B.Sc. (Part–II) Semester–IV Examination

4S : BIOTECHNOLOGY

(Genetic Engineering and Microbial Biotechnology)

Time : Three Hours] [Maximum Marks : 80

Note :— (1) All questions are compulsory.

(2) Draw well labelled diagrams wherever necessary.

1. (A) Fill in the blanks : 2

(i) PCR stands for _____.

(ii) The product of Lac Y gene is _____.

(iii) _____ obligate symbiont is used in the preparation of Biofertilizer.

(iv) Initiation codon is _____.

(B) Choose the correct alternative :

(1) Total No. of triplet codes are _____.

(a) 32

(b) 64

(c) 16

(d) 96

(2) pBR322 is a kind of _____ vector.

(a) Cosmid

(b) Phagmid

(c) Plasmid

(d) Phage

(3) The formation of Thymine dimer is caused by ____ light.

(a) U.V. light

(b) Visible

(c) X-rays

(d) I.R. rays

(4) The most commonly used organism for bioleaching is _____.

(a) *Thiobacillus ferooxidans*

(b) *Bacillus thuringenesis*

(c) *S. aureus*

(d) *Pseudomonas* 2

6. (a) Give the differences between batch and continuous fermentation. 4

(b) Explain Fluidized bed reactor. 4

(c) Describe about the microorganism and raw materials used in gluconic acid fermentation. 4

OR

(d) Explain CSTR bioreactor. 4

(e) Describe about the Penicillin production. 4

(f) Explain in brief alcohol production from molasses. 4

7. Explain in detail Biogas production. 12

OR

Discuss in detail slow sand filtration. 12

(C) Answer in **ONE** sentence :

(1) Define Genetic code.

(2) Write about central dogma of Protein synthesis.

(3) Name the organism involved in alcohol production.

(4) Mention the organism involved in penicillin fermentation. 4

2. (a) Briefly describe the characteristics of genetic code. 4

(b) Discuss about the light repair mechanism in DNA. 4

(c) Explain about the structure of DNA. 4

OR

(d) Discuss meselson and stahl experiment to prove semi conservative mode of DNA replication. 4

(e) Genetic codes are universal and degenerative. Explain. 4

(f) What are transposons ? 4

3. (a) Describe structural genes of Lac operon. 4

(b) Explain transcription process in prokaryotes. 4

(c) Explain chain initiation in translation process. 4

OR

(d) Describe RNA splicing in eukaryotes. 4

(e) Draw the schematic diagram of Lac operon. 4

(f) Discuss termination of translation process in prokaryotes. 4

4. Explain :

(a) Gene library. 4

(b) Southern blotting. 4

(c) pBR322. 4

OR

(d) Cosmids. 4

(e) Southern blotting. 4

(f) Restriction Endonucleases. 4

5. What are vaccines ? Explain in detail recombinant vaccines. 12

OR

What are dextrans ? Explain microbial production of dextran in detail. 12