

(DBT 01)

P.G. DIPLOMA EXAMINATION, MAY 2007.

Biotechnology

Paper I – MICROBIOLOGY AND IMMUNOLOGY

Time: Three hours

Maximum: 100 Marks

Answer any FIVE questions

All Questions carry equal marks.

1. Describe the general features of yeast with special reference to its cytology.
2. Give an account of the morphology and ultra structure of viruses.
3. Describe the different methods of sterilization for microbiological work.
4. Discuss the nutritional requirement of bacteria and explain the kinetics of bacterial growth.
5. Outline the role of nif gene in the process of Nitrogen fixation.
6. Describe the role of microbes in sulphur cycle.
7. Discuss the reactions of specific antibodies with particulate antigens.
8. What are vaccines ? Describe the different types of vaccines and their use in the prevention of diseases.
9. What are monoclonal antibodies ? How are they produced ? Explain their uses.
10. Describe the structure and properties of immunoglobulins.

(DBT 02)

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Paper II – BIOCHEMISTRY AND MOLECULAR BIOLOGY

Time: Three hours

Maximum: 100 Marks

Answer any FIVE questions

All Questions carry equal marks.

1. Give an account of the structure, function and nomenclature of nucleotides.
2. Outline the structure and functions of Three homopolysaccharides.
3. Justify that citric acid cycle is the final common metabolic pathway for the oxidation of ingested food.
4. Give an account of cholesterol metabolism.
5. Describe the enzymic reactions in Urea cycle
6. Outline the biosynthesis of inosine monophosphate.
7. Discuss the Watson and Crick model of DNA structure.
8. Give an account of transcription and explain the post transcriptional modifications.
9. Define genetic code and discuss its characteristics features.
10. What is mutation ? Describe the different types of mutations.

(DBT 03)

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**Paper III – PLANT AND ANIMAL TISSUE CULTURE
AND GENETIC ENGINEERING**

Time: Three hours

Maximum: 100 Marks

Answer any FIVE questions

All Questions carry equal marks.

1. What is a callus ? Explain the initiation and maintenance of callus.
2. Explain the procedure of single cell culture. Give its uses.
3. Discuss the methods of protoplast isolation and its culture.
4. What is a haploid plant ? Discuss the methods of its production.
5. Give the biochemical basis for each of the constituents of tissue culture medium.
6. Discuss the basic techniques and types of mammalian cell cultures.
7. Write the definition of each of the following items giving their importance in tissue culture.
 - (a) Micro carrier culture
 - (b) Cell synchronization
 - (c) Cell growth
 - (d) Cell transformation.
8. Write an explanatory essay on stem cell culture and its applications.
9. Write an essay on gene therapy
10. Give an account of the methods of identification and expression of cloned genes.

(DBT 04)

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Paper IV – APPLICATIONS OF BIOTECHNOLOGY

Time: Three hours

Maximum: 100 Marks

Answer any FIVE questions

All Questions carry equal marks.

1. Discuss various aspects of microbial growth from an industrial perspective.
2. Write an essay on the efficient use of microorganisms in industrial processes.
3. Explain the fermentative production of ethanol
4. What are the microbial strains used in the production of citric acid ? Discuss the optimal conditions for citric production.
5. Discuss the importance of enzymes in industrial applications of biotechnology
6. Give an account of amino acids in commercial use and their applications of biotechnology.
7. What are antibiotics? Discuss their role in medicine giving suitable examples.
8. Give an account of the industrial production of antibiotics.
9. Describe the production of insulin using genetically engineered microbes.
10. Explain the importance of transgenic plants and animals in medicine.