

**(DBT 01)****P.G. DIPLOMA EXAMINATION, DECEMBER 2008.****Biotechnology****Paper I — MICROBIOLOGY AND IMMUNOLOGY****Time : Three hours****Maximum : 100 marks****Answer any FIVE questions.****All questions carry equal marks.**

1. Describe the morphology and general features of viruses.
2. What are archaebacteria and explain their characteristic features with suitable examples?
3. How many ways gene transfer can be made in microorganisms?
4. What are the various types of nutritional requirements exist in bacteria?
5. Describe the role of microorganisms in sulphur metabolism.
6. How nitrogenase is regulated through nif gene in nitrogen fixation?
7. Write an essay on the interactions of antigen and antibody.
8. Discuss the various types of immunity with suitable examples.
9. What are vaccines and explain the different types of vaccines used control of diseases?
10. Write in detail about the fixation of complement.

**(DBT 02)****P.G.****DIPLOMA EXAMINATION, DECEMBER 2008.****Biotechnology****Paper II — BIOCHEMISTRY AND MOLECULAR BIOLOGY****Time : Three hours****Maximum : 100 marks****Answer any FIVE questions.****All questions carry equal marks.**

1. Describe the structure and functions of polysaccharides.
2. Name the different fatty acids and explain their functions in biochemical processes.
3. What are the different reactions involved in the citric acid cycle?
4. Write an account of cholesterol biosynthesis.
5. How ammonia is converted to urea in urea cycle?

6. Write the biochemical reactions involved in the synthesis of pyrimidines.
7. Draw a neat labelled diagram of double helix structure of DNA and discuss its salient features.
8. Write an essay on the transcription process and add a note on post transcriptional modifications.
9. How gene expression is regulated in prokaryotic organisms?
10. What are the different stages involved in protein synthesis through translation process?

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**(DBT 03)**

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**DIPLOMA EXAMINATION, DECEMBER 2008.**

**Biotechnology**

**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 are the steps involved in media preparation and sterilization for tissue culture work?
2. How to initiate and maintain the callus and suspension cultures?
3. Describe the role of meristem cultures in the improvement of agriculture.
4. Discuss the methodology for isolation of protoplasts.
5. What are the different types of mammalian cell cultures?
6. Discuss the constituents of culture media used in animal tissue culture and add a note on maintenance of culture.
7. What are stem cell cultures and explain their application in animal biotechnology?
8. What is in vitro fertilization and explain the different methods used in the transfer of embryo.
9. Discuss the role of restriction endonuclease used in the gene transfer.
10. Write an essay on gene therapy and explain its applications in molecular biology.

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**(DBT 04)**

**P.G. DIPLOMA EXAMINATION, DECEMBER 2008.**

**Biotechnology**

**Paper IV — APPLICATIONS OF BIOTECHNOLOGY**

**Time : Three hours**

**Maximum : 100 marks**

**Answer any FIVE questions.**

**All questions carry equal marks.**

1. How to improve the strains of microbes in fermentation industry?
  2. Give an account of the isolation and maintenance of pure cultures.
  3. Describe the production of citric acid in large scale.
  4. Write the steps involved in the production of butanol.
  5. How vitamin B<sub>12</sub> is produced from microorganisms?
  6. Write the applications of immobilized enzymes in biotechnology.
  7. Describe the production of cephalosporin and add a note on its applications in medical biotechnology.
  8. How tetra cycline is produced in large scale?
  9. What are transgenic plants and how are they produced through genetic engineering?
  10. How hepatitis  $\beta$  – vaccine is produced through recombinant DNA technology?
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