Code No: M0829/R07 **Set No. 1**

IV B.Tech. I Semester Supplementary Examinations, February/March - 2011

INDUSTRIAL BIOTECHNOLOGY

(Chemical Engineering)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks
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1. Define biotechnology and explain the meaning of old and new biotechnologies. Comment on the multidisciplinary nature and the commercial potential of biotechnology.

2. How can plants be employed as 'Bio-factories' for the production of useful secondary metabolites?

3. Why is 'gene transfer' in animals described as transfection and not transformation? Describe different transfection methods successfully used in animals?

4. What are cybrids and how can these be produced? Discuss the uses of cybrids in crop improvement programs.

5. What are the basic features of downstream processing, the methods of bioseparation following an industrial bioprocess. Explain them.

6. Describe the ethical concerns in respect to
   i) Embryonic stem cell research
   ii) Therapeutic cloning
   iii) Human cloning

7. Define intellectual property and intellectual property rights (IPR). Briefly describe the various forms of protection of intellectual properties and discuss the benefits and disadvantages from IPR regime.

8. Write short notes on:
   i) Production of secondary metabolites in cultures
   ii) Transfection
   iii) Monoclonal antibodies for diagnosis and therapy
   iv) Cytoplasts

Code No: M0829/R07 **Set No. 2**

IV B.Tech. I Semester Supplementary Examinations, February/March - 2011

INDUSTRIAL BIOTECHNOLOGY

(Chemical Engineering)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Discuss the scope and importance of biotechnology in promoting human welfare.

2. Discuss the various applications of animal cell culture.

3. What are monoclonal antibodies? Discuss principle utilized and the methods followed in the preparation of monoclonal antibodies.

4. Describe the available methods for isolation and purification of protoplasts.

5. Give a detailed note on plant transformation vectors.

6. Describe the physical and chemical methods of cell separation.

7. Describe the conditions, which need to be met before a patent can be issued. How and to what extent, these conditions can be met for patentable living organisms?

8. Write short notes on:
   (a) Somatic embryogenesis
   (b) Hybridoma technology
   (c) Totipotent cells
   (d) Organogenesis

Code No: M0829/R07 **Set No. 3**

IV B.Tech. I Semester Supplementary Examinations, February/March - 2011

INDUSTRIAL BIOTECHNOLOGY

(Chemical Engineering)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks
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1. Explain the importance of the following in bioprocess:
   (a) Buffers
   (b) Media economics
   (c) Physiological conditions of the fermentation process

2. Discuss the uses of biotechnology in medicine under the following three heads
   (a) Prevention of diseases
   (b) Diagnosis of diseases
   (c) Treatment of diseases

3. What is gene therapy and what are the limitations and prospects of its use in medicine?

4. Write an account of cell and organ differentiation. Describe briefly 'shoot bud differentiation' and 'somatic embryogenesis' and distinguish between them.

5. Give an account of different types of cell types and cell lines. How can you obtain a cell line from cultured cells? Discuss.

6. Explain briefly a third world perspective on biotechnology.

7. What are the obligations and implications of patenting biological material? Discuss the international conventions and co-operation in this connection.

8. Write short notes on:
   (a) Mutant selection in culture
   (b) Suspension culture
   (c) Monoclonal antibodies and vaccines
   (d) DNA fingerprinting

Code No: M0829/R07 **Set No. 4**

IV B.Tech. I Semester Supplementary Examinations, February/March - 2011

INDUSTRIAL BIOTECHNOLOGY

(Chemical Engineering)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks
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1. Write briefly the component parts of a fermentation process.

2. Discuss the process of cryopreservation in detail and write about its implications in the germplasm conservation of plants.

3. Give a brief account of different applications of monoclonal antibodies in basic studies and in commercial enterprises.

4. Compare haploid breeding with conventional method of plant breeding. Discuss their relative merits and demerits.

5. Are there any aspects of the new biotechnology which have particular relevance for developing countries? Justify.

6. What are the important criteria for determining the patentability of an invention?

7. Discuss the issue of patenting
   i) Higher organisms, including transgenic plants and animals
   ii) Isolated or synthesized genes

8. Write short notes on:
   (a) Liposomes
   (b) Hybridoma technology
   (c) Bergmann's cell plating
   (d) Transformation of protoplasts