

**IV B.Tech. II Semester Regular Examinations, April/May -2006**  
**BIOSENSORS AND BIOELECTRONICS**  
**(Bio-Technology)**

**Time: 3 hours**

**Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. What are biosensors? Write in detail about the types of biosensors used in biological applications? [16]
2. Write in detail about the types of membranes used in biosensors and their merits and demerites. [16]
3. Write in brief about types of transducers used in biosensors their principles and applications. [16]
4. Write notes on any two of the following: [16]
  - (a) Piezo electric Transducers
  - (b) Chemiluminescence based biosensors
  - (c) Impedemetric Transducers.
5. Write in brief about applications of biosensors in Medicine, agriculture and food industries? [16]
6. Discuss the potential advantages and developments of developing a biomolecular computer. [16]
7. Write in detail about the following: [16]
  - (a) Molecular arrays as memory stores
  - (b) Molecular wires and switches
  - (c) Mechanisms of unit assembly  
in a biomolecular computer.
8. Write in brief the designing of biomolecular photonic computer and it's commercial prospects in biotechnology sector. [16]

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1. What are biosensors? Write in detail about various components of biosensors with their working mechanism. [16]
2. Write in detail the types of biosensors, their merits and demerits? [16]
3. Write in brief about types of transducers with their working mechanism and their applications in biotechnology fields? [16]
4. Write short notes on the following: [16]
  - (a) Optical Transducers
  - (b) Conductometric Transducers
  - (c) Potentiometric Transducers
  - (d) Chemiluminescence Transducers.
5. Write short notes on [16]
  - (a) Molecular arrays
  - (b) Molecular switches
  - (c) Mechanisms of unit assembly.
6. Write in brief about biosensors used in [16]
  - (a) Online Monitoring for industrial processes
  - (b) Environmental monitoring.
7. Write in brief potential advantages and developments towards a biomolecular computer. [16]
8. Write short notes on the following: [16]
  - (a) Information processing
  - (b) Assembly of biomolecular memory store.

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1. Write in detail about types of biosensors and their applications in various industrial & research areas. [16]
2. Write in detail the types of membranes used in biosensors, their working mechanisms and limitations. [16]
3. Write short notes on the following: [16]
  - (a) Calorimetric transducers
  - (b) Piezoelectric transducers
  - (c) Mechanical transducers
  - (d) Electronics based transducers.
4. Write in detail the principles and applications of various transducers in biotechnology sector. [16]
5. Write short notes on applications of biosensors in [16]
  - (a) Clinical Industry
  - (b) Medicine and Healthcare
  - (c) Agriculture and food
  - (d) Environmental monitoring.
6. Write short notes on: [16]
  - (a) Molecular switches
  - (b) Mechanisms of unit assembly
  - (c) Molecular arrays.
7. Write in brief about potential developments and advantages of using a biomolecular computer. [16]
8. Discuss the components and working mechanism of a biomolecular photonic computer and its commercial prospects. [16]

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1. Write in detail types of biosensors and their applications in biotechnology sector. [16]
2. Write in detail about the components and working mechanism of biosensor. [16]
3. Write in brief about the types of transducers and their applications in industries. [16]
4. Write the principle and working mechanism of a transducer. State their merits and demerits. [16]
5. Write short notes on: [16]
  - (a) Biosensors in clinical chemistry
  - (b) Biosensors in medicine and healthcare.
6. Write short notes on: [16]
  - (a) Molecular arrays
  - (b) Molecular switches
  - (c) Mechanism of unit assembly.
7. Write in short the need for developing a biomolecular computer and state its prospectus. [16]
8. How you will design a biomolecular photonic computer? State its components and working mechanism. [16]

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