

**M. SC. (MEDICAL BIOTECHNOLOGY) SEM-IV (CHOICE  
BASED CREDIT SYSTEM) : WINTER - 2017**

**SUBJECT : NANOTECHNOLOGY IN MEDICINE**

Day : **Thursday**  
Date : **02/11/2017**

**W-2017-1060**

Time : **02.00 PM TO 05.00 PM**  
Max. Marks : 60

**N.B.:**

- 1) **Q.No.1 and Q.No.5 are COMPULSORY.** Out of remaining questions attempt **ANY TWO** questions from each section.
- 2) Answers to both the sections should be written in **SEPARATE** answer books.
- 3) Figures to the right indicate **FULL** marks.

**SECTION – I**

- Q.1** Answer **ANY FIVE** of the following: [10]
- a) What is atomic force microscopy? Explain its use in nanotechnology.
  - b) What are quantum dots?
  - c) Define nanomedicines.
  - d) What are cytonemes?
  - e) What is bottom up approach in synthesis of nanoparticles?
  - f) What are bucky balls?
- Q.2** Answer the following questions: [10]
- a) Explain drug delivery and different steps involved in drug delivery using nanoparticles.
  - b) Write different nanomedical approaches to detect and treat cancer.
- Q.3** Explain the following: [10]
- a) Explain the principle and working of photoluminescence spectroscopy and its use in nanotechnology.
  - b) Explain principle and working of confocal microscopy with its application in characterization of nanomaterials.
- Q.4** Write short notes on **ANY TWO** of the following: [10]
- a) Ligand directed active targeting
  - b) Drug targeting using magnetic nanoparticles
  - c) Anti-AIDS drugs

**SECTION – II**

- Q.5** Answer the following questions: [10]
- a) Explain the classification of biosensors based on transducers.
  - b) What are the different approaches used in cancer gene therapy?
- Q.6** Answer **ANY TWO** of the following: [10]
- a) What are molecular beacons? Explain their role in biosensing.
  - b) What is PEG? Explain its use in Gene therapy.
  - c) Explain the use of viral capsid in gene therapy with an example.
- Q.7** Write short notes on: [10]
- a) Micro array
  - b) Protein based biosensors
- Q.8** Write **ANY ONE** of the following: [10]
- a) Design a biosensor to detect HIV from blood.
  - b) Discuss strategies to transport nanocarrier across the cell membrane.

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