

**M. Sc. (Medical Biotechnology) Sem-IV (Choice Based Credit System) :**

**WINTER - 2018**

**SUBJECT : NANOTECHNOLOGY IN MEDICINE**

Day : Thursday

**W-2018-1304**

Time : 10.00 AM TO 01.00 PM

Date : 25/10/2018

Max. Marks : 60

**N. B. :**

- 1) **Q. No. 1 and Q. No. 5 are COMPULSORY.** Answer **ANY TWO** questions from Section – I and **ANY TWO** from Section – II from the remaining questions.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in the **SEPARATE** answer books.
- 4) Draw neat and labelled diagram **WHEREVER** necessary.

**SECTION - I**

- Q. 1** Attempt **ANY FIVE** of the following: **(10)**
- a) What are quantum dots?
  - b) What are nano “onions” ?
  - c) Write the structure of carbon nanotube.
  - d) What are magnetic nanoparticles? Write one example.
  - e) Write the structure of any core-shell particle.
  - f) Write the applications of S-layer in nanotechnology.
- Q. 2** Answer the following: **(10)**
- a) What are dendrimers ? Explain its structure and application in nanomedicine.
  - b) Explain different methods used for increasing bioavailability of a compound.
- Q. 3** Write short notes on **ANY TWO** of the following: **(10)**
- a) Ligand directed targeting
  - b) Theranostics
  - c) Liposomes in nanotechnology
- Q. 4** Attempt the following: **(10)**
- a) Explain the concept of personalized medicine.
  - b) Explain various methods used in nano medicine to control cancer.

**SECTION - II**

- Q. 5** Attempt **ANY FIVE** of the following: **(10)**
- a) Explain in detail characterization of nanoparticles using UV-Vis spectroscopy.
  - b) What is photoluminescence spectroscopy? Write its advantages.
- Q. 6** Write short notes on **ANY TWO** of the following: **(10)**
- a) AFM
  - b) Confocal microscopy
  - c) SEM
- Q. 7** Attempt the following: **(10)**
- a) What are nano biosensors? Write principle of antibody based biosensors.
  - b) What are DNA based biosensors? Explain its advantages.
- Q. 8** Attempt the following: **(10)**
- a) What are micro array? Explain its application in biotechnology.
  - b) What is gene therapy? Explain its importance in nanomedicine.

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