

M.Sc. (BIOTECHNOLOGY)/M.Sc. (MEDICAL BIOTECHNOLOGY) -SEM-II
(CBCS-2018 Course) SUMMER - 2019
SUBJECT- NANOBIOTECHNOLOGY

Day: Monday
Date: 22-04-2019

S-2019-1431

Time: 10:00 AM-1:00 PM
Max Marks:30

NB.

- 1) All questions are **COMPULSORY**.
- 2) Answer to both the sections should be written in the **SAME** answer books.
- 3) Figures to the right indicate **FULL** marks.
- 4) Draw well labeled diagrams **WHEREVER** necessary.

Q.1 Attempt any **FIVE** of the following: **(05)**

- a) What are the carbon nanotubes?
- b) Enlist unique properties of nanoparticles which make them different from its bulk counterpart.
- c) What are quantum dots?
- d) What are mono-dispersed nanoparticles?
- e) What is top down and bottom up approach?
- f) What are DNA origami? Write its application.
- g) What are reverse micelle?

Q.2 Attempt any **TWO** of the following: **(10)**

- a) Discuss the properties and applications of magnetic nanoparticles.
- b) What are bio-nanoassemblies? Discuss peptide based nanoassemblies in detail.
- c) Enlist various chemical methods of nanoparticle synthesis. Discuss Sol-Gel method in detail.

SECTION - II

Q.3 Attempt any **FIVE** of the following: **(05)**

- a) Define zeta potential? How it is measured?
- b) What is nano carrier mediated gene delivery.
- c) What is surface plasmon resonance?
- d) What is quantum confinement effect?
- e) What are nanotube based sensors?
- f) Write principle of photoluminescence spectroscopy.
- g) What are magnetic biosensors?
- h) Write the principle of FTIR spectroscopy.

Q.4 Attempt any **TWO** of the following: **(10)**

- a) Explain in detail characterization of nanoparticles using AFM.
- b) Discuss in detail dendrimer structure and their applications.
- c) Discuss various *in-vitro* methods of toxicity assessment of nanoparticles.

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