

T.Y.B.SC. SEM – VI (2014 COURSE) : WINTER - 2017
SUBJECT : ELECTIVE-II (a) PHYSICS OF NANOMATERIALS

Day : Friday
Date : 03/11/2017

W-2017-0695

Time : 12.00 NOON TO 02.00 PM
Max. Marks : 40.

N.B.:

- 1) All questions are **COMPULSORY**.
 - 2) Figures to the **RIGHT** indicate full marks.
 - 3) Draw neat diagrams **WHEREVER** necessary.
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Q.1 Attempt any **TWO** of the following: **(10)**

- a) What is spectroscopy? Describe UV-Visible spectroscopy with neat diagram in brief.
- b) Describe the sputter deposition method. Explain it with D.C. sputtering.
- c) What do you mean by nanomaterials? Explain various classifications of nanomaterials.

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

- a) What are the various properties of nanomaterials? Explain hysteresis loop to study magnetic properties of nanomaterials.
- b) What is nanocrystallization? Describe the nanocrystallization ZnO and TiO₂.
- c) Explain the applications of nanotechnology in the field of defence.

Q.3 Attempt any **TWO** of the following: **(10)**

- a) Explain scanning electron microscopy. Give its applications.
- b) Explain Bottom-up approach. Also give its advantages and disadvantages.
- c) Write a short note on "Challenges in Nanomaterials".

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

- a) Define nanoscience.
- b) State any two features of sol-gel method.
- c) State Beer-Lambert law.
- d) State any two factors which effects on mechanical properties of nanomaterials?
- e) Define Quantum dots.
- f) Give any two applications of nanotechnology in medical field.
- g) What are carbon nanotubes?

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