

T.Y.B.Sc. SEM. – VI (2014 COURSE) : WINTER 2018
SUBJECT : PHYSICS : ELECTIVE – II : PHYSICS OF NANOMATERIALS

Day : Saturday
Date : 20/10/2018

W-2018-0880

Time : 03.00 PM To 05.00 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) Explain the sputter deposition principle with diagram.
- (b) Explain the synthesis of nanocrystalline TiO₂ with diagram.
- (c) Explain the construction and working of x-ray diffractometer with diagram.

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

- (a) Explain single wall and multi wall carbon nanotubes with diagram.
- (b) Describe with diagram the ultrasonic spray pyrolysis method to synthesize the nanomaterials
- (c) Explain Diamagnetic, Paramagnetic and ferromagnetic materials.

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

- (a) Explain the application of nanomaterials in the field of Cancer Therapy with diagram.
- (b) Describe Scanning Electron Microscope (SEM) with diagram.
- (c) Explain the variation of energy gap with particle size in case of semiconductor nanoparticles.

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

- (a) Describe the thermoluminescence with diagram.
- (b) Explain the classification of nanomaterials with diagram on the basis of dimension.
- (c) Explain the I-V characteristic of quantum dot with diagram.
- (d) Explain the applications nanomaterials in the field of electronics.

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