

B.Tech. SEM -VI (Chemical 2014 Course (CBCS) : WINTER - 2018

SUBJECT : ELECTIVE –II : NANOMATERIALS

Day : Saturday
Date : 17/11/2018

W-2018-2447

Time : 10.00 AM TO 01.00 PM
Max. Marks : 60

N.B.

- 1) All questions are **COMPULSORY**.
 - 2) Figures to the right indicate **FULL** marks.
 - 3) Use of non-programmable calculator is allowed.
 - 4) Neat diagram must be drawn wherever necessary.
 - 5) Assume suitable data if necessary.
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Q.1 Discuss the importance, advantages and applications of nanomaterials. **(10)**

OR

Elaborate the terms with suitable examples:

- i) Nanowires ii) Nanotubes iii) Nanomachines

Q.2 Compare the following characterization techniques of nanomaterials: **(10)**

- i) SEM ii) TEM

OR

Categorize the techniques of nanoparticle synthesis. Explain solid state synthesis with example.

Q.3 Explain water-oil microemulsion technology of nanoparticle synthesis. **(10)**

OR

Explain the following:

- i) Solution precipitation ii) Sol gel processing

Q.4 Explain the physical, thermal and structural properties of nanostructured material. **(10)**

OR

Predict the influence of nanostructuring on electronic and optical properties of materials.

Q.5 Elaborate the role of nanomaterials in catalytic reactions with examples. **(10)**

OR

Explain the following:

- i) Nanoparticles as chemical reagent
ii) Metal oxide nanoparticles

Q.6 Explain scientific and technical advances in polymer nanocomposites with suitable examples. **(10)**

OR

Write notes on:

- a) Role of nanoparticle dimensions in nanocomposites
b) Interfacial compatibilization

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