

**B.TECH. SEM -VI (CHEMICAL 2014 COURSE (CBCS) :
WINTER - 2017**

SUBJECT: ELECTIVE – II: NANOMATERIALS

Day: **Friday**
Date: **24/11/2017**

W-2017-2180

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) Assume suitable data if necessary.

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- Q.1 a)** Elaborate the terms: **(05)**
i) Nanostructures ii) Nanomachines
- b)** Explain the prospective of nanomaterials. **(05)**

OR

- Q.1** Explain the classification of nanomaterials based on number of dimensions with example of each. **(10)**

- Q.2** Describe with suitable example: Chemical Vapor condensation. (CVC). **(10)**

OR

- Q.2** State Scherrer's Law and give the procedure to evaluate particle size form XRD analysis using Scherrer's law. **(10)**

- Q.3** Explain with suitable example, sol-gel processing for synthesis of nanomaterials. **(10)**

OR

- Q.3** Compare: **(10)**
i) Plasma based synthesis of nanoparticles
ii) Flame based synthesis of nanoparticles

- Q.4** Explain the influence of nanostructuring on mechanical and chemical properties of metals. **(10)**

OR

- Q.4** Write notes on: **(10)**
i) Physical properties of nanostructured materials
ii) Magnetic and structural properties

- Q.5** Elaborate the effect of controlled pore size of materials in catalysis. **(10)**

OR

- Q.5** Explain the role of nanocrystal shape and defects in heterogeneous catalytic reaction. **(10)**

- Q.6** Explain the synthesis and properties of polymer nanocomposites with layered reinforcement. **(10)**

OR

- Q.6** Elaborate: **(10)**
i) Interfacial compatibilization
ii) Advances in nanocomposite technology

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