

**M. Tech. (Nano Technology) Sem-III (CBCS – 2015 Course) :**  
**WINTER - 2018**

**SUBJECT: ELECTIVE-II d) NANO COMPOSITES**

Day: Thursday  
Date: 06/12/2018

**W-2018-3093**

Time: 11.00 AM TO 02.00 PM  
Max. Marks: 60

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**N.B:**

- 1) All questions are **COMPULSORY**.
  - 2) Figures to the right indicate **FULL** marks.
  - 3) Answer the both sections should be **SEPARATE** answer book.
  - 4) Draw neat labeled diagrams **WHEREVER** necessary.
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**SECTION-I**

**Q.1** What are methods to synthesize metal ceramic Nano-composites? Give (10)  
example along with target properties.

**OR**

With suitable schematic and composition, elaborate the synthesis (10)  
mechanism of mechanical alloying of Nano-composites.

**Q.2** Classify the Polymer based Nano-composites, given an example of each (10)  
along with preferred areas of applications.

**OR**

What types of polymer Nano-composites are developed to design CNT'S? (10)  
State the properties application and challenges associated with use of  
CNT'S.

**Q.3** State the composition of Nano-composite for thermal applications. Which (10)  
thermal properties are targeted while their development? State their areas of  
applications.

**OR**

State the composition of Nano-composite for optical applications. Which (10)  
optical properties are targeted while their development? State their areas of  
applications.

**SECTION-II**

**Q.4** How development of Nano-composites transcends into replacement of (10)  
amputated limbs? State the composites used for development of critical  
limbs?

**OR**

State and explain the development of Nano-composite drug's development (10)  
for cancer with suitable example

**Q.5** Explain enzyme based development of Bio-Nano composites. State their (10)  
properties and application.

**OR**

With suitable example, state the suitability of magnetic Nano-composite (10)  
particles for drug delivery.

**Q.6** Explain environmental SEM? How it can be used for characterization of (10)  
bio- nonmaterial's, what are its advantages over conventional SEM.

**OR**

What is a bio Nano- composite? Explain the role of DNA as template for (10)  
the growth of Nano-materials.