M. TECH. (NANO TECHNOLOGY) SEM-III (CBCS – 2015 COURSE) :
WINTER - 2017
SUBJECT: SELF STUDY-I :b) SYNTHESIS AND DESIGN NANOSCALE PRODUCTS

Day: **Thursday** Time: **11.00 AM TO 02.00 PM**
Date: **25/01/2018** **W-2017-2763** Max Marks: 60

N.B.:
1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Answers to both sections should be written in **SEPARATE** answer book.
4) Assume suitable data if necessary.

SECTION-I

Q.1 What are quantum dots based photonic devices? Explain giving suitable examples. **(10)**

OR

Q.1 Give detailed classification of nanomaterials based on dimensions. **(10)**

Q.2 Explain why Silicon quantum dots are used for solar cells. **(10)**

OR

Q.2 Give an overview of MOSFETS. Add note on the detail issues for MOSFET scaling. **(10)**

Q.3 Discuss any two methods for synthesis of magnetic nanoparticles. Give suitable examples. **(10)**

OR

Q.3 Differentiate between SWCNTs and MWCNTs from view point of properties and applications. **(10)**

SECTION-II

Q.4 Which types of nanomaterials find applications in Automotive industry? Explain giving suitable examples. **(10)**

OR

Q.4 How are nanoparticles toxic to human respiratory system? Explain considering the example of silver nanoparticles. **(10)**

Q.5 Which nanomaterials find applications in fabrication of sensors? Explain giving suitable examples. **(10)**

OR

Q.5 Differentiate between top down and bottom up approaches of nanoparticles synthesis. Give suitable examples. **(10)**

Q.6 How can nanoparticles be used for waste water treatment? Explain giving suitable examples. **(10)**

OR

Q.6 Write short notes on **(10)**
a) Quantum dots as biological markers
b) Limitations of CMOS at nanoscale

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