

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajiri (Dist), Hyderabad

IV B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, JUNE - 2019Subject: Nano TechnologyBranch: **ME****Time: 3 hours****Max. Marks: 60****PART – A**Answer **ALL** questions of the following**5x2Marks=10 Marks**

1. Write the principle of harmonic oscillator.
2. Suggest and explain a method to determine the crystal structure of nanomaterials.
3. What are the various molecular devices used in Nano-Medicine.
4. What is conductance of 'G'?
5. What are the applications of nanotribology

PART-BAnswer any **FIVE** Questions of the following**5x10 Marks= 50Marks**

1. a) Describe the importance of SiC in nanotechnology.
b) Describe the various stages of sintering of SiC nanoparticles.
2. a) Discuss in detail the concept of photoelectron spectroscopy?
b) Discuss the concept of switching glasses with nano particles?
3. a) Discuss the methods to prepare samples for electron microscope observations.
b) Discuss the general principles of Sol-Gel processing.
4. a) Discuss the working principle of Nano sensor based on quantum size effect?
b) Discuss the concept of biological imaging with semiconductor nanocrystals?
5. a) Discuss the molecular properties used to achieve mechanical functions.
b) What are the properties of nanomaterials used for diagnostic applications?
6. Write short notes on any two of the following
 - a) Discuss methods to prepare nanograined metallic materials.
 - b) Discuss methods to assess wear properties of nanomaterials.
 - c) Discuss any two methods of synthesizing nanoparticles of zirconia.
7. State Bragg's law? And explain the hardness properties of nano particles.
8. Explain basic biological concepts and principles for the development of nano engineering systems

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IV B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, JUNE - 2019Subject: Nano ChemistryBranch: **ME****Time: 3 hours****Max. Marks: 60****PART – A**Answer **ALL** questions of the following**5x2Marks=10 Marks**

1. State the main differences between Solvothermal and Hydrothermal methods of preparation of nanomaterials.
2. Why is it necessary to apply gold coating to certain nanoparticles to be visualized through SEM?
3. What is the difference between Carbon Nanofibers and Carbon Nanotubes?
4. What are the criteria for effective catalytic behavior of nanoparticles?
5. Name some size dependent properties of nanomaterials?

PART-BAnswer any **FIVE** Questions of the following**5x10 Marks= 50Marks**

1. a) Explain the synthesis of nano materials by top down approach with suitable examples.
b) Give the principles & experimental details of preparation of Nanoparticles by Precipitation Method.
2. a) Comment on the unique thermal properties of nanomaterials.
b) Write a note on photoluminescence and electroluminescence.
3. a) What are the functional differences between Scanning and Transmission Electron Microscopic Methods? What are the criteria of their choice? **[2]**
b) Narrate the principle and experimental procedure of characterization of nanomaterials by Dynamic Light Scattering (DLS) **[8]**
4. a) Describe the Catalytic Properties of Nano Particles with a special emphasis on the TiO₂ Nanoparticles
b) Discuss briefly about nanostructured crystals?
5. What are the adverse effects of halogenated organic water contaminants? How is this problem mitigated by nanomaterials?
6. Write short notes on the following
a) Environmental applications of nanoparticles **[3]**
b) Comment on the implications of Nanotechnology on the environmental issues **[3]**
c) Why is the Sol-Gel method named that way? Describe it through the preparation of any nanomaterial. **[4]**
7. Describe the importance of nanochemistry and explain any one method for the synthesis of nanoparticles with schematic illustration?
8. Explain the mechanical properties of nanomaterials?

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IV B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, JUNE-2019Subject: **ENTREPRENEURSHIP SKILLS**Branch: **Common to CE, ME, ECE, EEE, CSE & MINING**Time: **3 hours**Max. Marks: **60****PART – A**Answer **ALL** questions of the following**5x2Marks=10 Marks**

1. What is the difference between entrepreneur and entrepreneurship?
2. List out the characteristics of a typical entrepreneur.
3. What is entrepreneurial motivation?
4. Give a note on IPR.
5. Briefly discuss about entrepreneurial imagination and creativity.

PART-BAnswer any **FIVE** Questions of the following**5x10 Marks= 50Marks**

1. Discuss the role of entrepreneurs in the development of Indian Economy.
2. Give a brief account of the challenges of new venture startups encountered by the potential entrepreneurs.
3. Elaborate on the nature of corporate entrepreneurship.
4. What are the entrepreneurial motivations that encourage the entrepreneurs to set up the enterprises?
5. Discuss the process of identification an entrepreneurial ventures.
6. Define entrepreneurship? What are the new trends you have noticed in entrepreneurship during 21st century?
7. a) What are the objectives of trademark? What benefits does a registered trademark offer to its owner?
b) Creativity can be developed in a number of ways - explain.
8. Write short notes on any two of the following:
 - a) Entrepreneurial stress.
 - b) Difference between intrapreneur and entrepreneur.
 - c) Role of imagination in entrepreneurship

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IV B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, JUNE - 2019Subject: Nano MaterialsBranch: **Common to CE & ME****Time: 3 hours****Max. Marks: 60****PART – A**Answer **ALL** questions of the following**5x2Marks=10 Marks**

1. What is condensation?
2. What is chemical vapour deposition?
3. Write any two applications of X-ray diffraction.
4. What are the properties of graphene
5. What is Quantum dot?

PART-BAnswer any **FIVE** Questions of the following**5x10 Marks= 50Marks**

1. a) Describe laser pyrolysis method
b) What is Ball milling synthesis method? Explain Ball milling in detail?
2. Explain in detail about Electro deposition synthesis method with a neat diagram
3. How are metal nanoparticles synthesized by chemical reduction method?
4. Explain the construction and working of scanning electron microscope (SEM) with schematic diagram. Mention any two applications.
5. Explain in detail how XRD analysis is important in nanomaterial characterization.
6. What are carbon nanotubes? Discuss briefly about CNT.
7. Explain Reduction of Nano materials by tri-sodium citrate method
8. Answer any two of the following
 - a) What are the advantages and disadvantages of ball milling method?
 - b) Hydrothermal routes
 - c) Solution combustion synthesis

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IV B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, JUNE-2019

Subject: Air Pollution and Control

Branch: Common to ME & ECE

Time: 3 hours

Max. Marks: 60

PART-A

Answer **ALL** questions of the following

5x2Marks=10 Marks

1. What is air pollution? Write the causes for it.
2. Write the applications in the removal of gases like SO_x , NO_x , CO , HC in air pollution?
3. Write about plume rise models?
4. Write the advantages of gravitational settling chambers.
5. List out the in-plant control measures for thermal power plants.

PART-B

Answer any **FIVE** Questions of the following

5x10 Marks= 50Marks

1. a) Green House effect.
b) Effect of air pollutants on materials.
2. a) Combustion – air pollution.
b) Hydrocarbon removal.
3. a) Describe how humidity influences the pollution potential.
b) Write short notes on the impact of wind speed and direction on pollutants dispersion.
4. a) What is wet scrubber and the working procedure of it with a neat sketch?
b) What are the different Settling chambers to remove Particulate Matter (PM)? Explain it.
5. Write short notes on any two of the following
a) NO
b) What are the natural sources of air pollution?
c) Wind speed on plume behavior.
6. Explain about effect of air pollutants on man?
7. What is the importance of thermo dynamics of combustion?
8. What is the importance of radiation inversion and subsidence inversion?