

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VII (New) EXAMINATION – WINTER 2019****Subject Code: 2173901****Date: 23/11/2019****Subject Name: Application of CNT and Metallic Nanoparticles****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) Explain Magic Numbers of Metal Nanoclusters.	03
	(b) Define Metal Nanoparticles and Mention Different Technique for synthesis.	04
	(c) Explain the Structure of CNT with Figure. (Type, Chiral angle, Unit cell, No. of Carbon atoms, Diameter)	07
Q.2	(a) Mention Different Synthesis Technique for CNT and also Purification Methods.	03
	(b) Explain Mechanical and Vibrational Properties of CNT.	04
	(c) Write a short note on Reverse Micelle Synthesis.	07
	OR	
	(c) Explain all the Type of Wet Chemical Synthesis Technique.	07
Q.3	(a) Describe Heat Transport Properties of CNT.	03
	(b) Briefly Describe Line Group, Basics of SWNT and DWNT.	04
	(c) Describe Geometric and Electronic Structure of Metal Nano Particles.	07
	OR	
Q.3	(a) Describe Briefly any Three Biological Applications of CNT.	03
	(b) Write a Short note on Nobel Metal Nano Particles.	04
	(c) Mention and Describe any Five Properties of Carbon Nanotubes.	07
Q.4	(a) Describe Phase Transfer Method and Electrochemical Method for MNPs' Synthesis.	03
	(b) Differentiate Between Batch and flow reaction in Hydrothermal Synthesis.	04
	(c) Write a Short Note on Metal Nano particles, its Synthesis, Importance of stabilization and field of Application.	07
	OR	
Q.4	(a) Explain Solar energy based Application of MNPs.	03
	(b) Write a Short note on Optical Properties of CNT.	04
	(c) Describe Stabilization Mechanism of Metallic Nanoparticles and its types.	07
Q.5	(a) Define Dative Bond.	03
	(b) Describe Mechanical Application of CNT.	04
	(c) Describe Medical Application of Metallic Nano Particles.	07
	OR	
Q.5	(a) Explain Application of CNT in Electronics and Energy.	03
	(b) Define Zeta Potential and Hence DLVO Theory	04
	(c) Define Super Critical water and hence Explain Hydrothermal Synthesis for MNPs. Also Define Solvothermal Synthesis.	07
