

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2020

Subject Code:2173901**Date:19/01/2021****Subject Name:Application of CNT and Metallic Nanoparticles****Time:10:30 AM TO 12:30 PM****Total Marks: 56****Instructions:**

1. Attempt any **FOUR** questions out of **EIGHT** questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) Mention any two Nobel metal nanoparticles and write its properties.	03
	(b) Classify CNT based on number of walls and hence describe double wall CNT.	04
	(c) Write a short note on structure of CNT.	07
Q.2	(a) Write down applications of CNT based on its mechanical properties.	03
	(b) Define Stress and Strain and hence explain mechanical Property of CNTs.	04
	(c) Define MNPs and its Microelectronic applications.	07
Q.3	(a) What do mean by Solar Energy Conversation.	03
	(b) Explain Phase Transfer Method.	04
	(c) What are the types of stabilization mechanism and describe it?	07
Q.4	(a) Mention five-five applications of MNPs and CNTs for sensors, each.	03
	(b) Explain heat transport and thermal stability of CNTs.	04
	(c) Write a short note on medical field application of MNPs and biological applications of CNTs.	07
Q.5	(a) Define: CNTs for field emission and lightning application.	03
	(b) Explain: Magic nano clusters by describing magic numbers.	04
	(c) Mention wet chemical synthesis processes and describe any three briefly.	07
Q.6	(a) What do you understand by Dative Bond and DLVO Theory?	03
	(b) Mention any five metallic nanoparticles and hence explain any one wet chemical synthesis method.	04
	(c) Differentiate: Batch and Flow reaction and hence explain hydrothermal synthesis.	07
Q.7	(a) How can we use electrochemical route to form metallic nanoparticles?	03
	(b) Define: single wall CNT and explain elastic and vibrational properties of the same.	04
	(c) Define emulsion, also explain in detail: Reverse Micelle Synthesis.	07
Q.8	(a) Define: Supercritical Fluid.	03
	(b) How can we measure optical properties of nanostructure? Describe optical Properties of CNTs.	04
	(c) Write a short note on applications of CNTs for energy.	07
