

Enrolment Number: _____

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.TECH MIDSEM EXAMINATION
7th SEMESTER
ACY-2022-23 (ODD SEM)

Subject Name (Code): Nanomaterials and Surface Engineering (203109437)

Branch: Mechanical Engineering

Date: 08/08/2022

Time: 1 h 30 min

Total Marks: 40

Sr. No.		Marks
Q.1	(A) Compulsory Question	05
	a) The book "Engines of Creation: The Coming Era of Nano Technology" was published in-	
	i. 1989	
	ii. 1986	
	iii. 1959	
	iv. 1956	
	b) In which year the first illuminating talk on nano technology was given?	
	i. 1959	
	ii. 1969	
	iii. 1989	
	iv. 1979	
	c) Electrolytic deposition is _____ approach	
	i. Top down	
	ii. Bottom up	
	d) In nanocatalysis Spherical gold nanoparticles gave better results as compared to hemispherical gold nanoparticles	
	i. True	
	ii. False	
	e) What is the degree of confinement for Bulk materials?	
	i. 0	
	ii. 1	
	iii. 2	
	iv. 3	
	(B) Compulsory Question	05
	a) Which nanocatalyst is known as a backbone of catalytic infrastructure?	
	b) Which is one of the most important techniques for the controlled synthesis of nanostructured materials?	
	c) In which year Pt had been successfully applied to the synthesis of sulfuric acid.	
	d) Gold nanoparticles can be stabilized by _____	
	e) _____ are an interesting class of 2-dimensional microporous materials.	
Q.2	Attempt any four (Short Questions)	12
	(1) Differentiate between Electrochemical and Electrophoretic deposition.	
	(2) Explain the concept of steric hindrance and chemical clapping.	

- (3) Differentiate between positive and negative template based synthesis.
- (4) Mention some catalytic applications of Pt nanocatalyst.
- (5) Explain the effect of size dependence of nanoparticles on their properties
- Q.3 Attempt any two 08
- (1) Explain the factors affecting the performance of Nanocatalysts.
- (2) Mention the differences between Top down and Bottom up approach
- (3) Mention some requirements of Template Based Synthesis.
- QA (A) Explain Bimetallic Pd Nanocomplexes and its catalytic Applications 05
- (B) Explain with diagram the principle of operation of Electrospinning process. 05
- OR
- (B) Explain the colloidal synthesis of metal nanoparticles with the help of an example. 05