Paper / Subject Code: 52577 / Technology Stream ; Nanotechnology

May 28, 2024 10:30 am - 01:30 pm 1T00538 - B.E.(Chemical Engineering)(SEM-VIII)(Choice Base Credit Grading System) (R- 19) (C Scheme) / 52577 - Technology Stream : Nanotechnology QP CODE : 10054563

Llin	ne: 1 n	ree Hours] [Warks	s:8U
N.B:	: 1.	Question ONE is compulsory	
11.1.	2.	Attempt any THREE questions out of the remaining	7,
	3.	Figure to the right indicate full marks	
	4.	Illustrate answers with sketches wherever required and Diagram at approp	riate
		places carries marks	
	5.	Assume suitable data if necessary and indicate it clearly.	9
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1.		Write short notes	3
	(a)	Explain applications of molecular recognition.	(05)
	(b)	The principle of counter diffusion and fullerene crystal formation at the	(05)
	4	interface	5
	(c)\	Physical properties of CNTs	(05)
	(d)	Special characteristics of nanomaterials	(05)
.4	V	BY AY AY BY	` ′
2.	(a)	With suitable diagram, explain steps involved in supercritical	(10)
, , ,	5	oligomerization.	6
	(b)	Compare arc discharge method, chemical vapour deposition method and	(10)
,	8	laser ablation methods for CNT synthesis.) ` (
2	,	A A B A A A	
3	(a)	With suitable diagram explain the principle involved in Transmission	(05)
Y	6	Electron microscopy	` '
	(b)	Explain principle of atomic lithography	(05)
	(e)	Calculate the settling velocity of a particle moving in a gas stream. Assume	(10)
4		the following information: $\rho_p = 0.899 \text{ g/cm}^3$; $\rho = 0.0012 \text{ g/cm}^3$; $\mu(AIR) =$	()
8		$1.82 \times 10^{-4} \text{ g/cm s; } g = 980 \text{ cm/s}^2 \text{ dp} = 0.045 \text{ mm}$	
þ,	4		
4.	(a)	Explain with formulae, the forces that are the tools that can be used for	(10)
. (6	particulate/ recovery collection.	(-)
.40	(b)	What are the main biophysiochemical influences on the interface between	(05)
2	(-)	nanomaterials and biological systems?	()
-	(c)	What is role of gold nanoparticles in drug delivery systems.	(05)
	150		` ′
5.	(a)	Compare top down and bottom up strategies for nanostructuring with one	(05)
20	Ç . /	example each.	` ′
Ç	(b)	Explain, how nanoscale particles can be formed from semiconductor	(05)
V	6	compounds and thermoelectric components?	· - /
	(c)	Explain the method that is used to produce metal powders, especially	(10)
	5	magnetic metal or metal oxide powders.	(=0)
- 6	V		

6. Write short notest any 4) (a) Electrical Conduction and Ohms Law (b) Biosystems (c) Solar Principle of Scanning Electron Microscope Principle of Scanning Electron Microscope (b) Solar Principle of Scanning Electron Microscope (c) Solar Principle of Scanning Electron Microscope (d) Morphology of Electron Microscope (d) Solar Principle of Scanning Electron Microscope (e) Solar Principle of		Pap	per / Subject Code: 52577 / Technology Stream : Nanotechnology	8,
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