

Visvesvaraya Technological University, Belagavi.
Model Question Paper-I with effect from 2022-23(CBCS Scheme)

First/Second Semester B.E. Degree Examination

USN:

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Introduction to Nanotechnology

TIME:03 Hours

Max.Marks:100

Note: Answer any **FIVE** full questions, choosing at least **ONE** question from each **Module**.

QNo.	Module– 1		Marks
Q1	a	Describe the Sputtering technique for the preparation of nanomaterials. Mention its advantages and drawbacks.	8
	b	Write a note on a) surface to volume ratio b) precipitation for the synthesis of nanomaterials.	8
	c	Define the terms i) Nanomaterials ii) Quantum confinement	4
OR			
Q2	a	Explain how optical, electrical and catalytical properties vary from bulk to nanomaterials.	8
	b	Explain the steps involved in synthesis of silica nanoparticles by taking sol gel method.	8
	c	Explain the electron confinement in OD, 1D, 2D, 3D systems with examples.	4
Module– 2			
Q3	a	Explain the basic principle, working and instrumentation of scanning electron microscope with diagram.	8
	b	Explain the basic principle, working and instrumentation of Scanning Tunnelling Microscope (STM).	8
	c	Explain the basic principles of working of X-ray diffraction	4
OR			
Q4	a	Explain the contact, no-contact and tapping imaging modes of the Atomic Force Microscope (AFM). Mention any four differences between STM & AFM.	8
	b	Explain the working and instrumentation of the IR spectroscopy. Mention its application in the determination of functional group.	8
	c	In a X-ray diffraction experiment peak width half maxima (FWHM) is 0.6 $^{\circ}$ and its Bragg angle (θ) is 24° . Calculate the crystallite size using Scherrer equation. Given wavelength used in X-ray diffraction experiment is 1.54 Å. Given, $k = 0.94$	4
Module– 3			
	a	Explain the synthesis of graphene by chemical vapor deposition. Mention	8

Nanotechnology Question Paper

RS Peters



Nanotechnology Question Paper:

The Top Books of the Year Nanotechnology Question Paper The year 2023 has witnessed a noteworthy surge in literary brilliance, with numerous captivating novels captivating the hearts of readers worldwide. Lets delve into the realm of top-selling books, exploring the fascinating narratives that have captivated audiences this year. Nanotechnology Question Paper :

Colleen Hoover's "It Ends with Us" This heartfelt tale of love, loss, and resilience has captivated readers with its raw and emotional exploration of domestic abuse. Hoover skillfully weaves a story of hope and healing, reminding us that even in the darkest of times, the human spirit can prevail.

Uncover the Best : Taylor Jenkins Reids "The Seven Husbands of Evelyn Hugo" This spellbinding historical fiction novel unravels the life of Evelyn Hugo, a Hollywood icon who defies expectations and societal norms to pursue her dreams. Reids captivating storytelling and compelling characters transport readers to a bygone era, immersing them in a world of glamour, ambition, and self-discovery.

Discover the Magic : Delia Owens "Where the Crawdads Sing" This evocative coming-of-age story follows Kya Clark, a young woman who grows up alone in the marshes of North Carolina. Owens spins a tale of resilience, survival, and the transformative power of nature, captivating readers with its evocative prose and mesmerizing setting.

These popular novels represent just a fraction of the literary treasures that have emerged in 2023. Whether you seek tales of romance, adventure, or personal growth, the world of literature offers an abundance of compelling stories waiting to be discovered.

The novel begins with Richard Papen, a bright but troubled young man, arriving at Hampden College. Richard is immediately drawn to the group of students who call themselves the Classics Club. The club is led by Henry Winter, a brilliant and charismatic young man. Henry is obsessed with Greek mythology and philosophy, and he quickly draws Richard into his world. The other members of the Classics Club are equally as fascinating. Bunny Corcoran is a wealthy and spoiled young man who is always looking for a good time. Charles Tavis is a quiet and reserved young man who is deeply in love with Henry. Camilla Macaulay is a beautiful and intelligent young woman who is drawn to the power and danger of the Classics Club. The students are all deeply in love with Morrow, and they are willing to do anything to please him. Morrow is a complex and mysterious figure, and he seems to be manipulating the students for his own purposes. As the students become more involved with Morrow, they begin to commit increasingly dangerous acts.

The Secret History is a brilliant and suspenseful novel that will keep you wondering until the very end. The novel is a warning tale about the dangers of obsession and the power of evil.

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