Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2019

Course: Nano Technology **Semester: VII**
Program: BT-ME-Spz-MS&NT **Time 03 hrs.**
Course Code: MTEG 416 **Max. Marks: 100**

Instructions: Attempt all questions, there is an internal choice in Section B and Section C

SECTION A

S. No.		Marks	CO
Q 1	Compare and contrast nanoscience and nanotechnology.	**4**	**CO1**
Q 2	Identify and discuss any four challenges that are faced by researchers in characterization of nanomaterials.	**4**	**CO1, CO6**
Q 3	Discuss the significance of quantum dots.	**4**	**CO3**
Q 4	State the applications of carbon nanotechnology.	**4**	**CO1, CO4**
Q 5	Compare X-ray diffraction (XRD) and Fourier Transform Infrared (FTIR).	**4**	**CO6**
	SECTION B		
Q 6	Illustrate the application and state the process of sol gel method.	**10**	**CO6**
Q 7	Estimate the futuristic applications of nanotechnology.	**10**	**CO1, CO4**
Q 8	Discuss the electronic properties of metal and semiconductor nanoparticles.	**10**	**CO5**
Q 9	Describe in detail the synthesis procedure of carbon nano tubes. **OR**	**10**	**CO4, CO6**
	Why materials change their behavior at nano level interpret and asses.	**10**	**CO1**
	SECTION-C		
Q 10	Discuss and describe magnetic, electrical, optical, thermal, and mechanical properties of Nano-structured materials.	**20**	**CO2, CO5, CO6**
Q 11	Describe Top down and Bottom up approach with a neat sketch. **OR**	**20**	**CO3**
	Explain the method of preparation of nanoparticles through: a) Chemical Vapor Deposition (CVD) b) Electro Deposition	**20**	**CO6**