Seat No.:	Enrolment No.

## GUJARAT TECHNOLOGICAL UNIVERSITY ME – SEMESTER IV(NEW) EXAMINATION – SUMMER 2017

**Subject Code : 2743003** Date: 03/05/2017 **Subject Name: Surface Science and Nano Technology** Time: 02:30 pm to 05:00 pm Total Marks: 70 **Instructions:** 1. Attempt all questions. Figures to the right indicate full marks. **Q.1** Explain "top-down" and "bottom-up" methods to obtain nanostructured 07 (a) metal. Explain mesoporous materials. **07 (b) Q.2 07** Write a note on nanostructured ceramics. (a) Explain Template based nano synthesis. **(b) 07** OR State various techniques of synthesis of nanostructure and explain electro-**07 (b)** spinning in detail. **Q.3** Explain physicochemical properties of supercritical fluids. 07 (a) Explain about synthesis and applications of supercritical fluid. 07 Give brief description of pillared clays. **07** 0.3 (a) Explain Scanning tunneling microscopy. **(b)** 07 With a neat diagram, explain structure, properties and application of carbon 07 **Q.4** (a) nanotubes. Explain role of Surfactants at solid-liquid interfaces in emulsions. **07 (b)** Explain structure of zeolites and its application. **07** 0.4 (a) Explain Bio and Synthetic Enzymes in detail. Also, explain molecular **(b)** 07 mechanism of any one in detail. Explain about phase transfer catalysis for interfacial synthesis in detail. Q.5 07 (a) Explain Adsorption, Desorption and Condensation at nano level. **(b)** 07 Explain characteristics of nano Palladium as a catalyst. **07 Q.5** (a) Explain Magnetic properties and Electrical properties of nano particles. 07

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