

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2018

Subject Code:2153904

Date:20/11/2018

Subject Name:Elements of Nanoscience and Technology-II

Time: 10:30 AM TO 01:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

MARKS

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|------------|--|-----------|
| Q.1 | (a) What do you mean by Nano porous material? | 03 |
| | (b) State the name of materials used to achieve the electrical conductivity on glass or polymer substrate. | 04 |
| | (c) Write a short note on Electroplating with necessary figure and give few applications associated with it. | 07 |
| Q.2 | (a) Define: Quantum Confinement and Quantization of energy. | 03 |
| | (b) Describe effect of size and shape of nanostructured materials on the various chemical and physical properties. | 04 |
| | (c) Explain thermal expansion with necessary equation and applications. | 07 |
| | OR | |
| | (c) Write a short note on AAO template based Nano structure synthesis. | 07 |
| Q.3 | (a) What do you mean by Surface energy and Nano crystal? | 03 |
| | (b) What do you mean by Mesoporous materials and Macroporous materials. | 04 |
| | (c) Explain Electrophoretic deposition in the vicinity on Nano synthesis. | 07 |
| | OR | |
| Q.3 | (a) Define absorption in the vicinity of chemical reaction. | 03 |
| | (b) Discuss Catalysis and Detection. | 04 |
| | (c) Write a short note on Molecular sieve. | 07 |
| Q.4 | (a) Define (1) Small clusters (2) Large clusters. | 03 |
| | (b) Write down importance of electrolyte and surface preparation in electroplating. | 04 |
| | (c) Write a short note on AgX photography. | 07 |
| | OR | |
| Q.4 | (a) Define: Nanowire and Nano Particles. | 03 |
| | (b) Explain Magnetic properties at material at nanoscale. | 04 |
| | (c) Write a short note on synthesis of Nano particles using SCF. | 07 |
| Q.5 | (a) Define Zeolites with its applications. | 03 |
| | (b) Describe: high angle and low angle grain boundary. | 04 |
| | (c) Write a short note on Electro spinning for Nano structure synthesis. | 07 |
| | OR | |
| Q.5 | (a) What do you mean by Super Critical Fluids. | 03 |
| | (b) Describe Nanostructured super hydrophobic surfaces. | 04 |
| | (c) Give difference between solid surface and liquid surface with necessary equation. | 07 |

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