

- Note:**
1. Assume suitable data if necessary
 2. Figures to the right indicate full marks
 3. Question No. 1 is compulsory
 4. Solve any three out of the remaining five questions

- Q1. Solve any four** 5
- A What is the difference between Magnetostrictive and Piezoelectric transducers? 5
- B Explain Carbon Nanotube with properties. 5
- C Explain EDM process with its application 5
- D What do you mean by Thermoelectric materials? 5
- E Explain carbon Nanotube. 5
- F What is Soft Matter? List the properties of it 5
- Q2.** 5
- A Explain different types of non polymer based nanocomposites. 5
- B Classify the different types of Electroactive polymers. 10
- C Explain various tuning strategies for Split Ring Resonators. 5
- Q3.** 5
- A Explain selective powder binding (SPB) process with neat sketch 5
- B List the application of Magneto-rheological Fluids. 10
- C Explain Stereo lithography (STL) process in detail with suitable diagrams. 5
- Q4.** 5
- A Elaborate the application of smart materials. 5
- B Explain with neat sketches the one-way and two-way shape memory effect. 10
- C Explain the LIGA process in detail. 5
- Q5.** 5
- A Write down the advantages of the Generative manufacturing processes. 5
- B Explain thermoelectric Energy Harvesting Technique with diagram. 10
- C Explain Hysteresis Loop and state advantages, disadvantages and application of Hysteresis Loop 10
- Q 6.** 5
- A Explain Ion based Actuation in detail. 5
- B What is the difference between traditional and smart manufacturing? 10
- C Explain USM process and write advantages and disadvantages of USM 10
