

College of Engineering, Pune

End Semester Examination, November-2013

Subject: (ME 320) Advanced Manufacturing Techniques **Class:** T.Y. B. Tech. (Mechanical)

Duration: 3 hours.

Max. Marks: 60

Instructions to candidates:

1. Answer any **five** out of six questions.
2. Figures to right indicate full marks.
3. Support your write up with sketches/graphical representations wherever required.

- Q. 1** a) State the various additives used in polymers along with their purpose. 6
- b) List out at least five defects which arise during thermoforming process along with possible causes and solutions. 6
- Q. 2** a) State how rapid prototyping methods can be classified? Explain Stereolithography method of rapid prototyping with the help of neat sketch. 6
- b) State various methods of processing plastics and explain the process extrusion with the help of neat sketch. 6
- Q. 3** a) Discuss the effect of process parameters on WEDM process. 6
- b) Discuss the effect of process parameters in Laser Transformation Hardening. 6
- Q. 4** a) Prove that for constant current machining, the gap in ECM process is self regulated. 6
- b) Explain the following terms w.r.t surface treatment processes. 6
- i) Hot dipping
- ii) Short Peening
- iii) Mass finishing operations
- Q. 5** a) Identify and explain different modules of ECM equipment with the help of a neat sketch. 6
- b) Discuss the effect of process parameters on working accuracy and MRR in Abrasive Jet Machining (AJM) process. 6

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- Q. 6
- a) State the important components of an Automatic Force Microscope (AFM) and explain its working principle. 6
 - b) Write salient features of Graphene structure and discuss its physical, thermal and mechanical properties. 6
