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10ME837

Eighth Semester B.E. Degree Examination, June/July 2019

**Rapid Prototyping**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting at least TWO questions from each part.**

**PART - A**

- 1 a. What is rapid prototyping? Explain the need for compression in product development. (08 Marks)
- b. Explain with a neat sketch the working principle of stereolithography. What are its advantages, disadvantages and applications? (12 Marks)
- 2 a. Write a note on selective laser sintering building materials. (05 Marks)
- b. Distinguish between SLA and SLS processes. (05 Marks)
- c. Explain with a neat sketch the parts of extrusion head of FDM (Fused Deposition Modeling). (10 Marks)
- 3 a. Explain with neat sketches how a prototype is produced in solid ground curing. (10 Marks)
- b. Explain the following with respect to laminated object manufacturing:
  - i) Cross latching
  - ii) System parameters(10 Marks)
- 4 Explain with neat sketches the working principle of the following concept modelers:
  - a. 3D printing system
  - b. JP system 5(20 Marks)

**PART - B**

- 5 a. What is Rapid Tooling? Explain in detail the working of 3D Kel tool process. (10 Marks)
- b. Explain with a neat sketch the working principle of wire arc spray metal tooling. (10 Marks)
- 6 a. Explain with a neat sketch, the working principle of DMLS process. (10 Marks)
- b. Explain briefly the following:
  - i) Copper polyamide
  - ii) Soft tooling versus hard tooling(10 Marks)
- 7 a. Explain in detail the various formats of an STL file. (10 Marks)
- b. Write a note on the following:
  - i) Errors in STL file
  - ii) e-tools(10 Marks)
- 8 a. Explain the various part building errors in stereolithography process. (10 Marks)
- b. Write short notes on the following:
  - i) Part finishing
  - ii) Part build orientation constraints in selective laser sintering(10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.