06ME837

Eighth Semester B.E. Degree Examination, June/July 2013
Rapid Prototyping

Time: 3 hrs.

Max. Marks:100

Note: *Answer FIVE full questions, selecting atleast TWO questions from each part.*

PART – A

1   a. With example, explain the historical development of rapid prototyping technology.
      (06 Marks)
    b. List the applications of RP technology in manufacturing industries. **(04 Marks)**
    c. Compare RP technology with CNC technology. **(04 Marks)**
    d. With a neat sketch, explain the working of SLA technique. **(06 Marks)**

2   a. List and explain the different process parameters of SLA technique. **(06 Marks)**
    b. List the different materials which may be used in manufacturing of products in SLA technique. **(04 Marks)**
    c. Explain with a neat sketch, principle of operation of Selective Laser Sintering (SLS) process. **(10 Marks)**

3   a. List the specification of FDM machine. **(05 Marks)**
    b. List the different materials which may be used in FDM machine. **(05 Marks)**
    c. With a neat sketch, explain the construction and operation of SGC technique. **(10 Marks)**

4   a. What is concept modeling? Explain the applications of RP components from concept modeling. **(08 Marks)**
    b. With a neat sketch, explain the following concept modeling technique
       i)   Sander's model maker
       ii) 3D printer. **(12 Marks)**

PART – B

5   a. What is rapid tooling? Compare rapid tooling with conventional tooling. **(08 Marks)**
    b. Explain with a neat sketch the following indirect tooling techniques.
       i)   Aluminum filled epoxy tooling
       ii) Spray metal tooling. **(12 Marks)**

6   a. List the difference between following tooling types with example for each
       i)   Soft tooling v/s hard tooling
       ii) Direct tooling v/s indirect tooling. **(08 Marks)**
    b. With a neat sketch, explain the following methods of tooling techniques
       i)   Copper polyamide
       ii) Sand casting tooling
       iii) Laminate tooling **(12 Marks)**

7 a. Explain the procedure of modeling, SH file creation and layering steps before printing 3D model in RP machine for the following types of models
   i) Economical model
   ii) Precision model. **(12 Marks)**
   b. Write notes on :
   i) Collaboration tools
   ii) Internet based software. **(08 Marks)**

8 Write short notes on the following :
   a. Influence of building orientation
   b. Part building errors
   c. Errors in SH files
   d. File exchange errors. **(20 Marks)**

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