Register Number:

B.E., DEGREE EXAMINATIONS NOV/DEC 2012

Seventh & Fifth Semester

MECHATRONICS ENGINEERING

MCT 152: Rapid Prototyping

Time: Three Hours **Maximum Marks:100**

Answer ALL Questions:-

PART A (10×1=10 Marks)

1. Partial parallelization of product development steps to avoid time consumption is
   a) Simultaneous Engineering b) Reverse Engineering
   c) Value Engineering d) Re-engineering
2. The File format *STL* stands for
   a) Standard Text Language b) StereoLithography
   c) Shortened Text Link d) Simplified Text Line
3. The build style used in SLA is
   a) Quantum b) Stratesys c) STARWEAVE d) Magna Device
4. The parts produced by Solid Ground Curing are -------- than other prototypes.
   a) more stiffness b) more stable
   c) less weight d) more durable
5. A system with desktop prototype facility in design office is
   a) FDM b) SGC c) SLA d) LOM
6. In Laminated Object Manufacturing, the completed parts have to be sealed by
   a) Resin b) Urethane c) Thin sheet d) Metal powder
7. The process involves Discrete particles and fused by Laser is
   a) SGC b) LOM c) SLS d) LTP
8. In Thermo jet printers (3D system), the parts are constructed from
   a) Nylon b) Tin based alloy
   c) Nickel based alloy d) Thermoplastic material

9. For producing accurate silicone tools, the widely used RTV moulding is
   a) Vacuum casting b) Investment casting c) 3 D printing d) LOM
10. The group of methods which are less expensive and shorter lead time is known as
   a) Hard tooling b) Firm tooling c) Direct metal tooling d) EOS direct tool

PART B (10x2=20Marks)

11. What are the benefits of Rapid prototyping?
12. What is Slicing?
13. What are the process parameters involved in Stereolithography?
14. What are the advantages and Limitations of Solid Ground Curing?
15. List out the applications of Fused Deposition Modeling.
16. What are the components of Laminated Object Manufacturing?
17. What are the materials used in Selective Laser Sintering?
18. What are the Classifications of Concept Modellers?
19. Define Rapid Tooling.
20. What are the steps involved in Reverse Engineering?

PART C (5x14=70Marks)

21.a) (i). What are the commonly used RP data formats? (4)

(ii) Explain the impact of Rapid prototyping in product development. (10)

(OR)

b) (i) Discuss in detail, different Geometrical Modeling techniques and their role in Rapid prototyping. (7)

(ii) Describe the step by step procedure involved in Rapid prototyping process. (7)

22.a) i) With neat sketch, explain the principle and arrangement of Stereolithography. (10)

ii) Define trapped volume. (4)

(OR)

22.b). Explain the working principle of Solid Ground Curing with neat sketch. Also Mention its process capabilities.

23.a) Explain with neat sketch, the arrangement and technical characteristics of Fusion Deposition Modeling.

(OR)

23.b) (i) With neat sketch, explain the principle of Laminated Object Manufacturing. (8)

(ii) What are the advantages and drawbacks of LOM? (6)

24.a) (i) Explain the arrangement of Selective Laser Sintering process with neat sketch. (10)

(ii) Name the materials available for producing Cast patterns? Mention its properties. (4)

(OR)

24.b) Explain the Concept Modelers with application.

(i) Thermo jet Printer (7)

(ii) Sander's Model maker (7)

25.a) (i) What are the indirect methods available for rapid tool production? (4)

(ii) Explain RTV Tools and Epoxy Tools. (10)

(OR)

25.b) What is Reverse Engineering? Explain 3-D Scanning and 3-D digitizing.

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