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B.E / B. Tech ( Full Time) END SEMESTER EXAMINATIONS, April / May 2013

MANUFACTURING ENGINEERING BRANCH

SEVENTH SEMESTER – (Regulation 2008)

MF 9023 Rapid Prototyping

13

Time : 3 hr

Max Mark : 100

Part A ( 10 X 2 = 20 mark )

Answer all questions

1. Mention the importance of RP in product development.
2. What is meant by virtual prototyping?
3. List down the various digitization techniques.
4. What is meant by adaptive slicing?
5. What are the materials used in Stereolithography?
6. State the limitations of LOM.
7. What is the need of post curing in powder based RP systems?
8. List down the various applications of LENS.
9. Differentiate between solid based and powder based 3DP systems.
10. What is the principle of Shape Deposition Manufacturing?

Part B ( 5 X 16 mark = 80 mark )

- 11.(i) Discuss briefly about data processing for Rapid prototyping. (6)
- (ii) Explain the step-by-step procedure involved in CAD model preparation for Rapid Prototyping systems. (10)

12. (a) Discuss the various stages in the development of RP systems highlighting the merits and limitations.

OR

(b) In detail explain the need of Rapid Prototyping and tooling in product development.

13. (a) Discuss with diagrams the selective laser melting and electron beam melting process. Compare and contrast these processes.

OR

(b) Explain how SLS process can be used to produce direct and in-direct prototypes.

14. (a) With the help of a neat diagram, explain the principle of working, benefits and limitations of SLS.

OR

(b) (i) With reference to a case study, explain the operation of Laser Engineering Net Shaping. (12)

(ii) State the limitations of LENS. (4)

15. (a) (i) Give a detailed account on Liquid based 3DP systems. (10)

(ii) Discuss briefly about Selective Laser Melting method of Rapid prototyping. (6)

OR

(b) Explain the following :

(i) Shape decomposition. (6)

(ii) Electron beam melting. (6)

(iii) Rapid manufacturing. (4)