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B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2014

MECHANICAL ENGINEERING

VII Semester

MF 9023 Rapid Prototyping

(Regulation 2008)

Time : 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. Why rapid prototyping is important in Industries?
2. What is the difference between rapid tooling and rapid manufacturing?
3. How the RP systems are classified? Give the example of each classification?
4. What is the fundamental principle of stereo lithography process?
5. List the advantages of Direct shell production casting process.
6. What are the critical factors that influence the performance of SLS process?
7. What are the important challenges for selection of material in RP process?
8. What are the critical properties considered in the RP material selection?
9. Distinguish between forward and reverse engineering.
10. What are the non-contact type methods are available in reverse engineering?

Part – B (5 x 16 = 80 marks)

11. i) How the 3D printer manufacture multi colored components? Explain with the suitable sketches. (8)
ii) What is LENS process? List the advantages, limitations and applications. (8)
12. a) i) Describe the advantages of RP in terms of beneficiaries such as the product designers, tool designer, manufacturing engineer and consumers. (16)
(OR)
b) ii) With aid of simple sketches, explain the shape deposition manufacturing. How the actuation and sensor are embedded in this process. (16)
13. a) i) What are the advantages and limitations of solid based system compared with liquid based system? (6)
ii) With the help of simple line diagram explain the construction details of extrusion head in FDM process. (10)
(OR)
b) i) What are the features of LOM process? (6)
ii) Describe the process flow of LOM process: list the practical applications. (10)

14. a) i) List the materials available for powder based RP system. What are their respective applications? (12)
ii) In medical field, what are the common materials are used for product development? (4)

(OR)

- b) i) What are the common types of polymers used in RP? List their applications. (16)

15. a) i) State the reasons for reverse engineering in Industries. (6)
ii) With the aid of suitable example explain the various steps in reverse engineering. (10)

(OR)

- b) i) Distinguish between active and passive techniques in reverse engineering. (6)
ii) How the 3D-photogram used in reverse engineering process? Explain with suitable example. (10)