KUMARAGURU
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Register Number: ……..

B.E DEGREE EXAMINATIONS: APRIL/MAY 2016

(Regulation 2009)

Eighth Semester

MECHATRONICS ENGINEERING

MCT152: Rapid Prototyping

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. The File format STL stands for
   a) Standard Text Language b) Stereo Lithography
   c) Shortened Text Link d) Simplified Text Line
2. The process of making tools and molds for the production of prototypes is
   a) Rapid Tooling b) Reverse Engineering
   c) Concurrent Engineering d) Dimensioning
3. The layer thickness in SLA process varies from
   a) 0.25 to 0.5mm b) 0.025 to 0.5mm
   c) 0.25 to 5 mm d) 0.025 to 50mm
4. In this process the entire layer is solidified at once which reduces part creation time
   a) SLA b) SGC
   c) SLS d) FDM
5. In Laminated Object Manufacturing, the completed parts have to be sealed by
   a) Resin b) Urethane
   c) Thin sheet d) Metal powder
6. Material used in FDM is
   a) Metal b) Silica
   c) ABS d) Polyester
7. Powder metallurgy is related with this process
   a) SLS b) SL
   c) LOM d) FDM

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. Facet degeneracy is

a) Problem with STL file format b) Additive process

c) Formative process d) Subtractive process

10. Materials used for vacuum casting process _____.

a) PP b) ABS

c) Fe d) Both a & b

PART B (10 x 2 = 20 Marks)

11. State the basic concept of rapid prototyping.
12. Distinguish conceptual design and detail design
13. Compare between rapid tooling with conventional tooling.
14. Describe the necessity of using wiper blades in SLA.
15. How RP technology is involved in medical field. Give any two examples.
16. State the basic principle of LOM?
17. Give the advantages of SLS.
18. State the important properties of photopolymers?
19. What is the principle of 3D scanning?
20. Discuss the steps involved in Reverse Engineering?

PART C (5 x 14 = 70 Marks)

21. a) (i) With a block diagram explain the sequential engineering. (7)

(ii) Explain the impact of rapid prototyping on a product. (7)

(OR)

b) (i) Define Rapid Prototyping and predict its contribution in product development. (7)

(ii) State the benefits of RPT to the product designer and to the manufacturer. (7)

22. a) Discuss the principle, process parameters and process details of Stereo Lithography (SLA) and state its applications.

(OR)

b) (i) Explain the principle of Solid Ground Curing with neat sketch. Discuss its process parameters and machine details.

23. a) Discuss the principle, process parameters process details of Fusion Deposition Modeling and state its applications.

(OR)

b) State the working principle of Laminated Object Manufacturing. Explain the process, machine details and its applications.

24. a) (i) Explain a process which uses laser in powder based RP system. (7)

(ii) Write short notes on Thermo jet printers. (7)

(OR)

b) Discuss the principle, process parameters process details of 3 - Dimensional printers and state its applications.

25. a) (i) Explain the working principle and process parameter of 3D scanner and digitizer with an neat sketch. (7)

(ii) Explain how the moulds for injection plastics are fabricated using Epoxy tools (7)

(OR)

b) (i) List the steps involved in production of metal parts through quick tooling. (7)

(ii) Examine the functions of reverse engineering and product development in the new product development process. (7)

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