

(A Constituent Institute of Manipal University)

VI SEMESTER B.TECH (MECHATRONICS ENGINEERING) END SEMESTER EXAMINATIONS, JUNE/JULY 2016

SUBJECT: RAPID MANUFACTURING [MME 352]

REVISED CREDIT SYSTEM

Time: 3 Hours

INSPIRED BY LIFE

MAX. MARKS: 50

Instructions to Candidates:

- * Answer ANY FIVE FULL questions.
- Missing data may be suitably assumed.
- **1A.** Discuss different types of current materials used in additive manufacturing **3** processes along with examples.
- **1B.** What are the STL file format problems discuss with suitable examples. **4**
- **1C.** What is Rapid prototyping? Discuss different classification in prototyping with **3** suitable examples.
- 2A. Discuss different steps involved in LOM process. Also comment on materials 5 used and application areas.
- **2B.** How to solve wrong orientation facet problem while generating tessellation **5** model? Discuss with suitable example.
- **3A.** How 3D keltool process can be used for making RP patterns. Discuss with **5** process diagram.
- **3B.** How multijet modeling can be used for making colored products. Discuss with **5** suitable RP process.
- **4A.** Demonstrate how SLS process can be used in DTM Rapid tool process? **6**
- **4B.** How to solve a special case where a two or more gaps are formed from **4** coincidental vertex?
- 5A. How RP can Benefit to tool designer and Manufacturing Engineer? 3

5B. Check for approved edges and detect the gaps in the given tessellation model fig.1 and generate facets for the repair of gaps using generic solutions algorithm. Available facets numbers are given in the fig. assume suitable numbers for required vertices. Also discuss the algorithm for solving two or more facet generation for coincidental vertex.



Fig. 1: Tessellation model

- **6A.** Discuss how RP wheel works showing four major aspect of RP. **5**
- **6B.** Explain 3D printing process with suitable line diagram. Also comment on **5** materials used and verity of the products made by this process.

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