

4. Match list I (machines) with list II (details) and select the correct answer using the codes given [K₁] below.

List I	List II
A. Viper SLA	i. Laser & power: CO ₂ and 70 W
B. SLA 7000	ii. Laser & power: Solid state (Nd:YVO ₄) and @5000/h 800 mW
C. SLS HiQ™	iii. Laser & power: Solid state (Nd:YVO ₄) and @7500/h 100 mW
D. SLS Pro 140	iv. Laser & power: CO ₂ and 30 W

- a) A-i, B-ii, C-iii, D-iv b) A-i, B-iii, C-ii, D-iv
 c) A-iii, B-ii, C-i, D-iv d) A-iii, B-ii, C-iv, D-i

5. Match list I (RP systems) with list II (weakness) and select the correct answer using the codes [K₃] given below.

List I	List II
A. Fusion Deposition Modeling	i. Wax gets stuck in corners and crevices
B. Solid Ground Curing	ii. Restricted accuracy and slow process
C. Selective Laser Sintering	iii. Removal of supports is tedious
D. Laminated Object Manufacturing	iv. Poor surface finish

- a) A-i, B-ii, C-iii, D-iv b) A-ii, B-i, C-iv, D-iii
 c) A-iii, B-ii, C-i, D-iv d) A-ii, B-iii, C-i, D-iv

6. Match the appropriate item from the RHS with those on LHS [K₂]

LHS	RHS
A. Fusion Deposition Modeling	i. Solid based RP system
B. Solid Ground Curing	ii. Liquid based RP system
C. Laminated Object Manufacturing	iii. Powder based RP system with max part weight of 240 kg
D. Selective Laser Sintering	iv. Powder based RP system with max part weight of 148 kg

- a) A-i, B-ii, C-iii, D-iv b) A-ii, B-iii, C-iv, D-i
 c) A-iii, B-iv, C-i, D-ii d) A-iv, B-i, C-ii, D-iii

7. One of the main strength and its achievement of using Laminated Object Manufacturing (LOM) technology is: [K₂]
- A. High precision
 B. The feature-to-feature accuracy can be achieved is usually better than 0.127 mm
- a) Both A and B are true b) A is true and B is false
 c) Both A and B are false d) A is false and B is true
8. A. In thermo jet printer, parts is constructed from a thermoplastic material. [K₂]
 B. In Sandar's model maker, parts is constructed from a thermoplastic material.
- a) A is true and B is false b) A is false and B is true
 c) Both A and B are true d) Both A and B are false
9. One of the indirect method of rapid tooling is [K₁]
- a) Fusion Deposition Modeling b) Ceramic tool
 c) Laser engineered net shaping d) Stereolithogrpahy system
10. The main disadvantage of direct AIM in obtaining parts is [K₂]
- a) not dependent on the skill of the operator b) not dependent on the injection cycle
 c) dependent on the shape and size of the mould parts d) simply lying with any operator

PART B (10 x 2 = 20 Marks)

11. Define rapid manufacturing. [K₁]
12. List the main roles of prototype in the product development process. [K₂]
13. Mention any four ranges of applications of Stereo Lithography technology. [K₂]
14. Express the two principles on which Selective Laser Sintering process is based. [K₂]
15. List all the medical imaging application areas of Solid Ground Curing system. [K₁]
16. Discuss the weaknesses of Fusion Deposit Modeling technology. [K₁]
17. Express the two principles on which Laser Engineered Net Shaping process is based. [K₂]
18. Name the most popular material used in LOM process and mention the reason. [K₃]
19. List the very two important requirements must be followed during STL file generation. [K₂]
20. List the four limitations of epoxy tools. [K₃]

PART C (6 x 5 = 30 Marks)

21. Relate the computer tools used to support product development and their roles during the various phases of the development process. [K₃]
22. Discuss the principle of operation of Selective Laser Sintering in detail [K₂]

23. Describe the process details of Solid Ground Curing system [K₂]
24. List all the application areas of Laser Engineered Net Shaping technology [K₂]
25. Prepare a sample STL file for the shaded triangle shown in Fig. 1. [K₆]

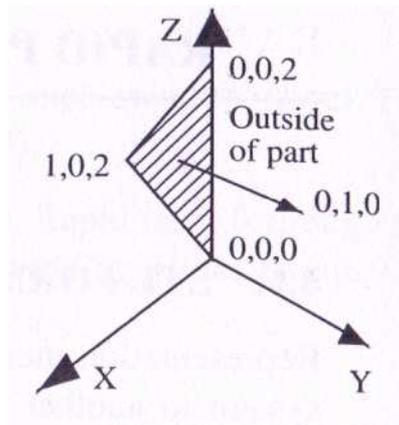


Fig.1

26. Identify uniqueness of the process of copper polyimide in Rapid manufacturing and describe it. [K₂]

PART D (4 x 10 = 40 Marks)

27. Explain the working details of Stereolithography technique [K₂]
28. Explain the principle and process details of Fused Deposition Modeling system [K₂]
29. a) Compare the two main types of spray metal disposition technique (4) [K₄]
 b) List the steps involved in the fabrication of models employing the JP system. (6) [K₃]
30. Discuss the medical application of Rapid Prototyping in Tissue engineering scaffolds [K₃]
