**SAMPLE QUESTION BANK**

**Program: BE (Mechanical Engineering)**

Curriculum Scheme: **Rev 2016**

**BE Semester VIII**

Course Code:MEDLOC8042 and Course Name: Rapid Prototyping

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**MCQ- SAMPLE SET**

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| 1. | STL file format is represented by interaction of \_\_\_\_\_\_. |
| Option A: | lines and hexagons |
| Option B: | lines and rectangles |
| Option C: | lines and triangles |
| Option D: | lines and circles |
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| 2. | Roller in Selective laser sintering is used to |
| Option A: | Add / remove powder raw material |
| Option B: | Apply glue on previous layer |
| Option C: | Apply heat to stick base layer |
| Option D: | No specific function |
|  |  |
| 3. | Choose the correct sequence to generate prototype. |
| Option A: | 3D CAD data - CAD solid model - STL file - RP prototype |
| Option B: | CAD solid model - 3D CAD data - RP prototype - STL file |
| Option C: | STL file - 3D CAD data - CAD solid model - RP prototype |
| Option D: | 3D CAD data - STL file - CAD solid model - RP prototype |
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| 4. | Silicon Rubber Molding is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
| Option A: | Indirect Soft Tooling |
| Option B: | Indirect Hard Tooling |
| Option C: | Direct Soft Tooling |
| Option D: | Direct Hard Tooling |
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| 5. | Sand blasting is used as post processing in RP to |
| Option A: | Improve looks & aesthetics |
| Option B: | Improve physical properties |
| Option C: | For better surface quality |
| Option D: | To remove support structures |
|  |  |
| 6. | Solid Ground Curing process is not used in making of \_\_\_\_\_\_\_\_\_\_. |
| Option A: | Investment casting |
| Option B: | Mold and tooling |
| Option C: | Medical imaging |
| Option D: | Cutting tools |
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| 7. | Which one is the advantage of Three-Dimensional Printing (3DP) process? |
| Option A: | High speed |
| Option B: | Limited functional parts |
| Option C: | Limited materials |
| Option D: | Poor surface finish |
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| 8. | HMD stands for? |
| Option A: | Head Masked Display |
| Option B: | Head Mounted Detection |
| Option C: | Head Mounted Display |
| Option D: | Head Made Display |
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| 9. | Post-production wax removal is required in \_\_\_\_\_\_\_\_\_. |
| Option A: | FDM |
| Option B: | SLS |
| Option C: | SGC |
| Option D: | 3DP |
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| 10. | The ceramic powder bed was preheated to a temperature higher than \_\_\_\_\_\_\_ to reduce thermal stresses |
| Option A: | 1000°C |
| Option B: | 1600°C |
| Option C: | 1900°C |
| Option D: | 1200°C |
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| 11. | What is the disadvantage of contact scanners? |
| Option A: | It is based only on CMM |
| Option B: | Soft materials cannot be scanned accurately |
| Option C: | Very small size job (Nano-microns) can be scanned |
| Option D: | It takes more time to scan compared to non contact type. |
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| 12. | In the building phase of Laminated object manufacturing, thin layers of adhesive-coated material are sequentially bonded to each other and individually cut by\_\_\_\_\_\_\_\_\_\_. |
| Option A: | Diamond Cutter |
| Option B: | CO2 Laser |
| Option C: | Sharp Knife |
| Option D: | Water jet cutting |
|  |  |
| 13. | Which of the following is not polymer? |
| Option A: | Silicone |
| Option B: | PLA |
| Option C: | ABS |
| Option D: | Polyamide |
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| 14. | New-product development starts with \_\_\_\_\_. |
| Option A: | Idea screening |
| Option B: | Idea generation |
| Option C: | Concept development and testing |
| Option D: | Marketing strategy development |
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| 15. | Cast Kirksite Tooling uses\_\_\_\_\_\_\_\_\_\_\_\_\_\_material. |
| Option A: | Aluminium Alloy |
| Option B: | Zinc Aluminium Alloy |
| Option C: | Steel Alloy |
| Option D: | Carbon Fiber |
|  |  |
| 16. | Metal spraying process is restricted to models with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ surfaces. |
| Option A: | Large and gently curved |
| Option B: | Small and gently curved |
| Option C: | Large and with projection |
| Option D: | Small and with projection |
|  |  |
| 17. | PolyJet process from Objet uses\_\_\_\_\_\_\_. |
| Option A: | Inkjet technology to create parts from photocurable resins |
| Option B: | Laser technology to create parts from photocurable resins |
| Option C: | Inkjet technology to create parts from non-curable resins |
| Option D: | Laser technology to create parts from non-curable resins |
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| 18. | Role of wax material in SGC is\_\_\_\_\_\_. |
| Option A: | To make surface smooth |
| Option B: | To Improve physical properties |
| Option C: | To increase productivity |
| Option D: | To provide support structure in handling |
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| 19. | The filament on the spools in FDM is heated in\_\_\_\_\_\_\_\_\_\_ before deposition. |
| Option A: | Extrusion head |
| Option B: | Spinner |
| Option C: | Furnace |
| Option D: | Vessel |
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| 20. | STL files contains \_\_\_\_\_\_. |
| Option A: | Mass properties of the model |
| Option B: | Geometrical data |
| Option C: | Drawing data |
| Option D: | Colour data |
|  |  |
| 21. | Which material can be efficiently used as a support material? |
| Option A: | ABS |
| Option B: | PLA |
| Option C: | Nylon |
| Option D: | PVA |
|  |  |
| 22. | Material shrinkage error can occur because of; |
| Option A: | poor resin properties |
| Option B: | bed weather conditions |
| Option C: | poor calibration of the machine |
| Option D: | error in cad file |
|  |  |
| 23. | Metal spraying process is restricted to models with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ surfaces. |
| Option A: | Large and gently curved |
| Option B: | Small and gently curved |
| Option C: | Large and with projection |
| Option D: | Small and with projection |
|  |  |
| 24. | Which statement is correct for Soft Tooling? |
| Option A: | It is used for mass production |
| Option B: | It is used for single cast or small batch production |
| Option C: | It is used for simple cast |
| Option D: | It is used for both small as well as mass production |
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| 25. | Which of the following material is water soluble? |
| Option A: | Polylactic acid (PLA) |
| Option B: | Acrylonitrile butadiene styrene (ABS) |
| Option C: | Polycarbonate (PC) |
| Option D: | Polyvinyl alcohol (PVA) |
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| 26. | Packing density of part obtained from SLS process is in the range\_\_\_\_\_\_\_\_. |
| Option A: | 25 to 50 percent |
| Option B: | 50 to 62 percent |
| Option C: | 75 to 90 percent |
| Option D: | 98 to 100 percent |
|  |  |
| 27. | The FDM process build parts directly by extruding \_\_\_\_\_\_\_ melt onto the model |
| Option A: | porous |
| Option B: | solid |
| Option C: | semi-liquid |
| Option D: | powder |
|  |  |
| 28. | In SLA, the powder not melted or fused during processing serves as a |
| Option A: | waste |
| Option B: | built-in support |
| Option C: | extra powder |
| Option D: | throw away powder |
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| 29. | In Solid Ground Curing process mask is generated by\_\_\_\_\_\_\_\_\_\_\_. |
| Option A: | UV lamp |
| Option B: | Ionographic process |
| Option C: | Melted wax |
| Option D: | Resin |
|  |  |
| 30. | Solid Ground Curing process is not used in making of \_\_\_\_\_\_\_\_\_\_. |
| Option A: | Investment casting |
| Option B: | Mold and tooling |
| Option C: | Medical imaging |
| Option D: | Cutting tools |
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| 31. | Disadvantage associated with Solid Ground Curing process is\_\_\_\_\_\_\_\_. |
| Option A: | Wax gets stuck in corners and crevices |
| Option B: | Self-supporting |
| Option C: | Minimum shrinkage effect |
| Option D: | High structural strength and stability |
|  |  |
| 32. | The laser beam power in laminated object manufacturing is designed to cut exactly the thickness of \_\_\_\_\_\_\_\_\_of material at a time. |
| Option A: | one layer |
| Option B: | two layers |
| Option C: | four layers |
| Option D: | eight layers |
|  |  |
| 33. | Advantage of SLS process |
| Option A: | Large physical size of the unit |
| Option B: | High power consumption |
| Option C: | Poor surface finish |
| Option D: | No part supports required |
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| 34. | PolyJet process from Objet involves \_\_\_\_\_\_\_\_\_. |
| Option A: | An array of printing heads to simultaneously selectively deposit powder |
| Option B: | An array of printing heads to simultaneously selectively deposit photopolymer |
| Option C: | Laser for printing |
| Option D: | Laser for masking |
|  |  |
| 35. | In PolyJet process from Objet curing is done using \_\_\_\_\_\_\_\_\_\_\_. |
| Option A: | Laser |
| Option B: | Polymerization |
| Option C: | UV lamp |
| Option D: | Hardener |
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| 36. | Virtual Reality (VR) is the illusion of; |
| Option A: | 3D Animation with effects |
| Option B: | 3D interactive Computer-generated reality |
| Option C: | 3D images |
| Option D: | 2D Animation with effects |
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| 37. | Which one of the statement is correct? |
| Option A: | Product life cycle management is a part of project data management |
| Option B: | Project data management is a part of product life cycle management |
| Option C: | Computer integrated manufacturing is a part of product data management |
| Option D: | Product life cycle management excludes project data management |
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| 38. | \_\_\_\_\_\_\_\_\_\_ is one where mechanical forces or restricting forms are applied on a material so as to form it into the desired shape. |
| Option A: | Subtractive process |
| Option B: | Additive process |
| Option C: | Formative process |
| Option D: | Casting process |
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| 39. | Arrange new product development cycle stages  A. Idea B. research C. introduction D. development E. Analysis F. Testing |
| Option A: | A - B - D - F- E - C |
| Option B: | A - F- E - C - B - D |
| Option C: | A - B - D - E- F - C |
| Option D: | A - B - D - F - C - E |
|  |  |
| 40. | Which of the following is the process of the pre-processing stage? |
| Option A: | Remove support |
| Option B: | De-powdering loose material |
| Option C: | Checking 3D CAD data |
| Option D: | Dip in a binder to strengthen the part |
|  |  |
| 41. | Which is the manufacturing process uses tooling of the product to minimal |
| Option A: | Rapid manufacturing |
| Option B: | Subtractive manufacturing |
| Option C: | Hybrid manufacturing |
| Option D: | Casting process |
|  |  |
| 42. | What is the disadvantage of PLA material? |
| Option A: | Variety of colors |
| Option B: | No harmful fumes during printing |
| Option C: | Environmentally friendly |
| Option D: | Brittle in nature |
|  |  |
| 43. | ABS and PLA materials are dissolved by \_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
| Option A: | Acetone |
| Option B: | Ketone |
| Option C: | Ethyl Ketone |
| Option D: | Ethyl Acetone |
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| 44. | What is the definition of Rapid Tooling? |
| Option A: | It is the process of producing fast non metallic tooling. |
| Option B: | It is the process of production of fast prototyping. |
| Option C: | It is the process of production of fast tooling through the prototypes made using rapid prototyping. |
| Option D: | It is the process of production of non metallic tooling through the prototypes made using rapid prototyping. |
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| 45. | 3D Keltool is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
| Option A: | Powder Metal Process |
| Option B: | Liquid Based Process |
| Option C: | Solid Metal Process |
| Option D: | Resin Based Process |
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| 46. | Epoxies are\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
| Option A: | Thermosetting polymers |
| Option B: | Thermoplastic polymers |
| Option C: | Ceramics |
| Option D: | Composites |
|  |  |
| 47. | Roller in Selective laser sintering is used to |
| Option A: | Add / remove powder raw material |
| Option B: | Apply glue on previous layer |
| Option C: | Apply heat to stick base layer |
| Option D: | No specific function |
|  |  |
| 48. | Which of the following is a process of redesigning an existing product to improve its functions, add quality to increase the useful life? |
| Option A: | Reverse engineering |
| Option B: | Value engineering |
| Option C: | Rapid prototyping |
| Option D: | Computer aided design |
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| 49. | Which type of material can be used in SLA process? |
| Option A: | Powder |
| Option B: | Photo-curable liquid |
| Option C: | Non photo-curable liquid |
| Option D: | Solid |
|  |  |
| 50. | The filament on the spools in FDM is heated in\_\_\_\_\_\_\_\_\_\_ before deposition. |
| Option A: | Extrusion head |
| Option B: | Spinner |
| Option C: | Furnace |
| Option D: | Vessel |
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| 51. | In Laminated object manufacturing slicing is performed |
| Option A: | in vertical plane |
| Option B: | at inclination of 30⁰ |
| Option C: | on horizontal plane |
| Option D: | at inclination of 60⁰ |
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| 52. | Which one is the limitation associated with solid ground curing process? |
| Option A: | Self-supporting |
| Option B: | Requires large physical space |
| Option C: | Minimum shrinkage effect |
| Option D: | High structural strength and stability |
|  |  |
| 53. | Which one is the advantage of Three-Dimensional Printing (3DP) process? |
| Option A: | High speed |
| Option B: | Limited functional parts |
| Option C: | Limited materials |
| Option D: | Poor surface finish |
|  |  |
| 54. | Sand blasting is used as post processing in RP to |
| Option A: | Improve looks & aesthetics |
| Option B: | Improve physical properties |
| Option C: | For better surface quality |
| Option D: | To remove support structures |
|  |  |
| 55. | In\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ink-jet printing head deposits a liquid adhesive that binds the material for creating prototype. |
| Option A: | Three Dimensional Printing (3DP) |
| Option B: | Polyjet Printing (Objet) |
| Option C: | Solid ground curing (SGC) |
| Option D: | Stereolithography (SLA) |
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| 56. | Objet 3D printing uses\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_material. |
| Option A: | Photopolymer material |
| Option B: | Solid based material |
| Option C: | Monomer Material |
| Option D: | Sheet metal |
|  |  |
| 57. | Solid Ground Curing is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
| Option A: | Solid Based RP System |
| Option B: | Liquid Based RP System |
| Option C: | Powder Based RP System |
| Option D: | Gas Based RP System |
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| 58. | Which of the following are examples of appropriate applications of additive manufacturing in the actual production of parts and products? |
| Option A: | Castings made in small quantities |
| Option B: | Plastic parts in small batch sizes |
| Option C: | Mass-produced metal parts |
| Option D: | Special textile products |
|  |  |
| 59. | Which of the process is available in colors? |
| Option A: | SLA |
| Option B: | FDM |
| Option C: | MJM |
| Option D: | 3D Printer |
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| 60. | Which tool is widely used for producing accurate silicone tools for casting parts with fine details a very thin wall? |
| Option A: | Metal spraying |
| Option B: | Vacuum Casting |
| Option C: | Shell casting |
| Option D: | Sand casting |
|  |  |
| 61. | The renewal of production processes and the establishment of environmentally-friendly operations within the manufacturing field is called: |
| Option A: | Precise Manufacturing |
| Option B: | Green Manufacturing |
| Option C: | Agile Manufacturing |
| Option D: | Rapid Manufacturing |
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| 62. | Which is indirect RM processes for non-metals |
| Option A: | Perfactory |
| Option B: | Silicon Rubber Molding |
| Option C: | 3DP |
| Option D: | LOM |
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| 63. | Which one of the process is subtractive prototyping? |
| Option A: | 5 axis CNC Milling |
| Option B: | Fused Deposition Modeling |
| Option C: | Multi-Jet Modeling |
| Option D: | Stereolithography Apparatus |
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| 64. | Which CNC Machine with attachments Can Be Used for Direct Metal Deposition (DMD) |
| Option A: | CNC two-axis tables milling machine |
| Option B: | CNC three-axis tables milling machine |
| Option C: | CNC drilling Machine |
| Option D: | CNC Lathe machine |
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| 65. | Which of the following RP technologies uses powders as the starting material |
| Option A: | Droplet deposition manufacturing |
| Option B: | Fused-deposition modeling |
| Option C: | Laminated-object manufacturing |
| Option D: | Selective laser sintering |
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| 66. | Which one of the following RP technologies uses solid sheet stock as the starting material? |
| Option A: | laminated-object manufacturing |
| Option B: | selective laser sintering |
| Option C: | stereo lithography |
| Option D: | Three-dimensional printing |
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| 67. | 3D reserved section of an SLC file consists of how many bytes? |
| Option A: | 256 |
| Option B: | 512 |
| Option C: | 1024 |
| Option D: | 2048 |
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| 68. | Which of the following is not a design consideration for 3D printing? |
| Option A: | Material |
| Option B: | Tolerance |
| Option C: | Size of build tray |
| Option D: | CAD software |
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| 69. | Which of the following are problems with the current rapid prototyping and additive manufacturing technologies? |
| Option A: | Limited material variety |
| Option B: | Inability to convert a solid part into layers |
| Option C: | Poor machinability of the starting material |
| Option D: | The inability of the designer to design the part |
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| 70. | Of all of the current material addition rapid prototyping technologies, which one is the most widely used? |
| Option A: | Ballistic particle manufacturing |
| Option B: | Selective laser sintering |
| Option C: | Solid ground curing |
| Option D: | Stereolithography |
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| 71. | Design for Modularity can be advantageous in many ways like |
| Option A: | Prototyping |
| Option B: | Manufacturing |
| Option C: | Part design |
| Option D: | Augmentation |
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| 72. | Which of the following process is suitable for making injection molding tools? |
| Option A: | EBM |
| Option B: | FDM |
| Option C: | SL |
| Option D: | SLS |
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| 73. | Give the elaboration of CMM. |
| Option A: | Coordinate Measuring Machine |
| Option B: | Cycle Measuring Machine |
| Option C: | Coordinate Marking Machine |
| Option D: | Carbon Measuring Machine |

**Descriptive SAMPLE SET**

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| Q1. | Illustrate the problems associated with STL file format |
| Q2. | Discuss the various reasons why Reverse Engineering is used. |
| Q3. | Explain the materials used in FDM process. |
| Q4. | Define Virtual Reality and explain its features. |
| Q5. | Compare SGC with SLA and LOM. |
| Q6. | Explain the process of silicon rubber molding in Rapid Tooling. |
| Q7. | Explain the process of Cast Kirksite Tooling in Rapid Tooling. |
| Q8. | Explain in Detail Applications & Scope of RP in industry. |
| Q9. | Compare LOM and FDM. |
| Q10. | Write short note on Working Principle of Solid Ground Sintering. |
| Q11. | Differentiate between Virtual Reality and Augmented Reality. |
| Q12. | Write a short note on materials used in liquid based RP methods. |
| Q13. | Discuss advantages and limitations of any two RP file formats |
| Q14. | Explain working principle of SLS process. |
| Q15. | Explain SLA with respect to following parameters;  Principle, process steps, advantages, limitations and applications |
| Q16. | Explain SGC with respect to following parameters;  Principle, process steps, advantages, limitations and applications. |
| Q17. | Explain role of RP in Product Development Cycle with example. |
| Q18. | Explain FDM with respect to following parameters;  Principle, process steps, advantages, limitations and applications. |
| Q19. | Explain the characteristics of the materials used in various rapid prototyping processes. |
| Q20. | Explain LOM with respect to following parameters;  Principle, process steps, advantages, limitations and applications . |
| Q21. | Explain 3D Printing with respect to following parameters;  Principle, process steps, advantages, limitations and applications. |
| Q22. | Write Short note on Epoxy Tooling and Spray Metal Tooling, |
| Q23. | Explain the steps involved in Rapid Prototyping Process. |
| Q24 | Advantages and limitations of RP. |
| Q25. | Explain working principle of FDM process. |
| Q26. | Explain the materials used in SLS process. |
| Q27. | Write Short notes on  i. Objet Printing  ii. 3D Printing |
| Q28. | Write a short note on  i. Silicon rubber moulding in RP Tooling  ii. Digitising methods in Reverse Engineering |
| Q29. | Explain the stages of product development cycle |
| Q30. | Explain various stages of Rapid prototyping process. |
| Q31. | Explain Virtual reality (VR) and Augmented reality(AR) . |
| Q32. | Explain liquid based rapid prototyping techniques Also list down the advantages, disadvantages and application of the technique. |
| Q33. | Explain rapid tooling, List out the various indirect rapid tooling methods and explain about the silicon rubber tooling.. |
| Q34. | Write in detail about applications and scope of RP. |
| Q35. | Explain briefly vacuum casting and epoxy tooling. |
| Q36. | Discuss about photo polymerization. |
| Q37. | With neat sketch explain the process of selective laser sintering process and its advantages, disadvantages and applications. |
| Q38. | Describe laminated object manufacturing process and discuss the principle and effect of process parameters on qualities of final product. |