

**ADDITIVE MANUFACTURING**

Time: Four Hours

Full Marks:70

Answer Question 1 and any Three Questions from rest

1. a) What is Additive Manufacturing? Discuss about various classification of Additive Manufacturing with examples.  
b) Discuss about the various steps of Additive Manufacturing process.  
c) What are the advantages and limitation of Additive Manufacturing?  
d) What are the application and future scope of Additive Manufacturing?  
( 8+8 +7+7)
2. a) What is Concurrent Engineering? What are the benefits of concurrent engineering?  
b) Discuss on the alternative names of Concurrent Engineering?  
c) What is Industry 4.0? How is Additive Manufacturing related with it?  
(5+5+5)
3. Describe the working principle of the following AM process with sketch highlighting the strength and weakness of it.  
a) Fused Deposition Modelling (FDM)  
b) Stereo Lithography Apparatus (SLA)  
(7+8)
4. Describe the working principle of the following AM process with sketch highlighting the strength and weakness of it.  
a) Selective Laser Melting (SLM)  
b) Wire Arc Additive Manufacturing (WAAM)  
(8+7)
5. Describe the working principle of the following AM process with sketch highlighting the strength and weakness of it.  
a) Electron Beam Melting (SLM)  
b) Laminated Object Manufacturing (LOM)  
(7+8)
6. a) What is Reverse Engineering? Explain the processes of Reverse Engineering.  
b) What is Rapid Tooling? Distinguish between Direct Rapid Tooling and Indirect Rapid Tooling? What are the applications of Rapid Tooling in Investment Casting?  
(7+8)