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**15ME82**

## Eighth Semester B.E. Degree Examination, November 2020 Additive Manufacturing

Time: 3 hrs.

Max. Marks: 80

*Note: Answer any FIVE full questions irrespective of modules.*

### Module-1

- 1 a. Distinguish clearly between Additive Manufacturing and CNC machining. (08 Marks)  
b. Sketch and explain solid sheet system process. (08 Marks)
  
- 2 a. Discuss post processing of AM parts. (08 Marks)  
b. Discuss Additive Manufacturing applications. (08 Marks)

### Module-2

- 3 a. With necessary sketches, discuss the following: (08 Marks)  
 (i) Pulse width modulation.  
 (ii) Speed control of AC motor. (04 Marks)  
 b. With, Torque-Speed curve, explain compound motor. (04 Marks)  
 c. List advantages and disadvantages of DC motors. (04 Marks)
  
- 4 With necessary sketches, discuss the following (any four) : (16 Marks)  
 (i) Thyristors                      (ii) Bipolar transistors                      (iii) Vane pump.  
 (iv) Rotary screw compressor.    (v) Relay

### Module-3

- 5 a. Explain clearly classification of polymers. (08 Marks)  
b. Explain various powder production techniques. (08 Marks)
  
- 6 a. Explain clearly how powder is compacted in Isostatic pressing? (08 Marks)  
b. Discuss various stages of liquid phase sintering. (08 Marks)

### Module-4

- 7 a. What are nano materials? Discuss the classification of nonmaterials. (08 Marks)  
b. Explain the synthesis of nano-materials by sol-gel process. (08 Marks)
  
- 8 a. With a sketch, explain the Transmission Election Microscopy (TEM). (08 Marks)  
b. With a sketch, explain the working principle of Atomic Force Microscopy (AFM). (08 Marks)

### Module-5

- 9 a. Explain different types of motion control system in NC process. (08 Marks)  
b. With a block diagram, explain the steps involved in the development of a proven part program. (08 Marks)
  
- 10 a. List and discuss strategies for automation and production systems. (08 Marks)  
b. With a block diagram, explain configuration of an adaptive control system. (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.