VTU B.E/B.TECH QUESTION PAPER SET

CBCS
SEMESTER VIII

ADDITIVE MANUFACTURING

Use bookmarks to easily navigate between question papers

CBCS SCHEME

USN | | | | | | | | | | |

15ME82

Eighth Semester B.E. Degree Examination, Aug./Sept.2020
Additive Manufacturing

Time: 3 hrs. Max. Marks: 80

Note: i) For Regular Students: Answer any FIVE full questions irrespective of modules.
ii) For Arrear Students : Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain Additive Manufacturing Process Chain with a neat block diagram. **(06 Marks)**
b. Explain stereolithography process with a neat sketch. Write its merits, demerits and applications. **(10 Marks)**

2 a. Distinguish between stereolithography and selective laser sintering processes. **(06 Marks)**
b. Explain with a neat sketch, Fused Deposition Modeling Process. What are its advantages, disadvantages and applications? **(10 Marks)**

Module-2

3 a. Explain the types of D.C. motors with field coils with neat sketches. **(08 Marks)**
b. Explain briefly with neat diagrams the following:
(i) Thyristors (ii) Triacs **(08 Marks)**

4 a. Compare hydraulic and pneumatic systems. **(06 Marks)**
b. Write a note on shape memory alloys. **(10 Marks)**

Module-3

5 a. Explain with a neat sketch polymer processing by wet spinning. **(08 Marks)**
b. Explain in detail the liquid phase sintering. **(08 Marks)**

6 a. Explain with a neat sketch Dry Spinning Method for additive manufacturing. **(08 Marks)**
b. Explain with a neat sketch powder production by vacuum atomization technique. **(08 Marks)**

Module-4

7 a. Explain with a neat sketch the sol-gel process. **(06 Marks)**
b. Explain the principle of Scanning Electron Microscopy (SEM) with a neat sketch. What are its applications? **(10 Marks)**

8 a. Explain with a neat sketch, flame assisted ultrasonic spray pyrolysis. **(08 Marks)**
b. Explain with a neat sketch the salient features of Atomic Force Microscopy (AFM). **(08 Marks)**

Module-5

9 a. Write a note on NC, CNC and DNC machine tools. **(06 Marks)**
b. Explain briefly the various strategies for automation and process improvement. **(10 Marks)**

10 a. Explain with a block diagram the levels of automation. **(10 Marks)**
b. Distinguish between continuous control in process industries and discrete control in manufacturing industries. **(06 Marks)**

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USN | | | | | | | | | | |

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:
(i) Pulse width modulation.
(ii) Speed control of AC motor. **(08 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) :
(i) Thyristors (ii) Bipolar transistors (iii) Vane pump.
(iv) Rotary screw compressor. (v) Relay **(16 Marks)**

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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