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15ME82

Eighth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Additive Manufacturing

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a. Define Additive Manufacturing process. List out the advantages of AM process in detail. **(08 Marks)**
    b. Explain the process chain (steps) of AM process. **(08 Marks)**

OR

2   a. List out the post processing techniques of AM parts. Explain any four steps. **(08 Marks)**
    b. Explain use of pattern prepared by AM process for investment casting. **(08 Marks)**

Module-2

3   a. Explain the applications of AM products in the field of aerospace and biomedical. **(08 Marks)**
    b. With a neat sketch explain the working of Hydraulic Motors:
        (i) Gear motor   (ii) Unbalanced Vane motor **(08 Marks)**

OR

4   a. Write a note on the following Electrical Actuators:
        (i) Solenoids   (ii) Diodes **(08 Marks)**
    b. Write short notes on :
        (i) Piezoelectric actuators   (ii) Shape memory alloys. **(08 Marks)**

Module-3

5   a. List out the polymers used for AM process. Explain Dry spinning technique of polymer processing. **(08 Marks)**
    b. Write a note on :
        (i) Biopolymer materials   (ii) History of powder metallurgy (PM) process. **(08 Marks)**

OR

6   a. Sketch and explain Powder Extrusion process. **(08 Marks)**
    b. Define Sintering process and explain Microwave Sintering process with neat sketch. **(08 Marks)**

Module-4

7   a. Explain Bottom-up approach and Top-down approach. **(08 Marks)**
    b. Sketch and explain Flame assisted ultrasonic spray Pyrolysis process. **(08 Marks)**

OR

8   a. Explain the working of scanning electron microscope with neat sketch. **(08 Marks)**
    b. List out the advantages and limitations of Transmission electron microscope. **(08 Marks)**

Module-5

9   a. Write a note on classifications of CNC machine tools. **(08 Marks)**
    b. Explain the NC words used in manual part programming. **(08 Marks)**

OR

10 a. Define automation. Explain the levels of Automation. **(08 Marks)**
    b. Write a note on Continuous and Discrete control. **(08 Marks)**

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1 JAN 2020