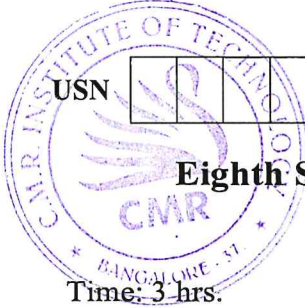


CBCS SCHEME



17ME82

Eighth Semester B.E. Degree Examination, July/August 2022 Additive Manufacturing

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Define Additive Manufacturing. List out advantages and disadvantages in detail. (10 Marks)
b. Explain the process chain of Additive Manufacturing. (10 Marks)

OR

- 2 a. Explain Molten Material System (Fused Deposition Modelling (FDM) in Additive Manufacturing with a neat sketch. (10 Marks)
b. Explain post processing of Additive Manufacturing. (10 Marks)

Module-2

- 3 a. Classify hydraulic motor and explain with a neat sketch Gear Motor. (10 Marks)
b. Write short notes on:
(i) Relays
(ii) Solenoids (10 Marks)

OR

- 4 a. With a neat sketch, explain the construction of single acting and double acting hydraulic cylinders. (10 Marks)
b. Write short notes on:
(i) Piezoelectric actuators
(ii) Shape memory alloys (10 Marks)

Module-3

- 5 a. Classify polymers and explain melt spinning process in detail. (10 Marks)
b. Briefly explain steps in powder metallurgy. List advantages, disadvantages and applications. (10 Marks)

OR

- 6 a. Sketch and explain dry spinning process. (10 Marks)
b. Define atomization. Explain Gas Atomization and Water Atomization with sketches. (10 Marks)

Module-4

- 7 a. Explain bottom-up and top-down approaches. (10 Marks)
b. Explain Scanning Electron Microscope, with a neat sketch. (10 Marks)

OR

- 8 a. Explain X-ray Powder Diffraction (XPD) in Additive Manufacturing. List advantages, disadvantages and applications. (10 Marks)
b. Explain Scanning Probe Microscope (SPM) with a neat sketch. Also list advantages and disadvantages of SPM. (10 Marks)

Module-5

- 9 a. Differentiate between Computer Numerical Control (CNC) and Direct Numerical Control (DNC) System. (10 Marks)
 b. Define Automation. Explain with a block diagram different levels of automation. (10 Marks)
- OR**
- 10 a. List the advantages and disadvantages of CNC machines. (10 Marks)
 b. Write a manual part program for machining the profile shown in Fig.Q10(b). (All dimensions are in mm)

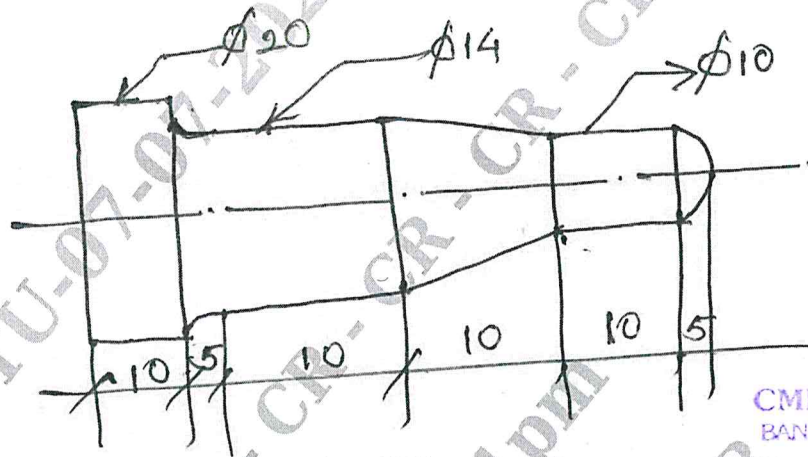


Fig.Q10(b)

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(10 Marks)
