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**INSTITUTE OF AERONAUTICAL ENGINEERING**

(Autonomous)

Dundigal-500043, Hyderabad

B.Tech IV SEMESTER END EXAMINATIONS (REGULAR) - JULY 2022

Regulation:UG20

MANUFACTURING PROCESS**Time: 3 Hours****(MECHANICAL ENGINEERING)****Max Marks: 70****Answer ALL questions in Module I and II****Answer ONE out of two questions in Modules III, IV and V**

(NOTE: Provision is given to answer TWO questions from among one of the Modules III / IV / V)

All Questions Carry Equal Marks**All parts of the question must be answered in one place only****MODULE – I**

1. (a) List the different types of defects that arises when performing the casting process. Explain any two types of defects with sketches. [BL: Remember| CO: 1|Marks: 7]
- (b) There is a certain pattern allowances that are given during the casting process
 - i) Compensate for volumetric loss during solidification.
 - ii) Protect the mold cavity from getting damaged when the mold is removed.Identify the type of the allowances and explain the same with relevant sketches. [BL: Understand| CO: 1|Marks: 7]

MODULE – II

2. (a) With sketch, explain the laser beam welding process .Mention advantages and limitation of laser welding also give application [BL: Understand| CO: 2|Marks: 7]
- (b) A welding process that uses fuel gas and oxygen to provide heat for fusion. Recognize the same process. Illustrate the procedure with a neat schematic diagram. [BL:Understand | CO: 2|Marks: 7]

MODULE – III

3. (a) Bring out the differences between hot working and cold working when it comes to the forming of metals. [BL: Understand| CO: 3|Marks: 7]
- (b) Cold working processes exist where in wires or tubes are produced to be used in a number of applications. Identify the cold drawing process. Illustrate any two types with neat sketches. [BL: Understand| CO: 3|Marks: 7]
4. (a) Explain the changes in structure and properties during cold working, recovery and recrystallization. [BL: Understand| CO: 4|Marks: 7]
- (b) A sheet metal is kept between a die and a punch in a cold drawing operation. Identify and explain the process with a neat sketch. [BL: Understand| CO: 4|Marks: 7]

MODULE – IV

5. (a) What is additive manufacturing? Explain the various parts that are produced by additive manufacturing.
[BL: Understand| CO: 5|Marks: 7]
- (b) A manufactured part is given a desired form by forcing the part through a billet at high pressure. Identify and illustrate the process that is done at a high temperature with a neat sketch.
[BL: Understand| CO: 5|Marks: 7]
6. (a) Write a note on impact extrusion and list the advantages of impact extrusion over other extrusion processes
[BL: Understand| CO: 5|Marks: 7]
- (b) There exists a fast fabrication of a physical part, model or assembly using 3D computer aided design (CAD). Recognize and illustrate any two techniques of the process.
[BL: Apply| CO: 5|Marks: 7]

MODULE – V

7. (a) What is forging? Enumerate the principle and different operations of a forging process.
[BL: Understand| CO: 6|Marks: 7]
- (b) There are forming processes that use opposing rolls to form a metal part. Identify and explain its working with a neat sketch.
[BL: Apply| CO: 6|Marks: 7]
8. (a) Explain the process, advantages and limitations of swaging and also mention its applications.
[BL: Understand| CO: 6|Marks: 7]
- (b) What principles are normally considered good practice in the design of drop forgings? Describe in detail.
[BL: Remember| CO: 6|Marks: 7]

