

III B.Tech I Semester Regular Examinations, November 2006
MANUFACTURING TECHNOLOGY
(Mechatronics)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Write the advantages of Casting over other Manufacturing processes.
(b) Describe various types of Pattern materials. [8+8]
2. Describe Cupola furnace with a neat sketch specifying different zones of heating and Chemical reactions. [16]
3. (a) Describe various rolling products used in industries.
(b) How the forces in rolling are estimated? Explain the theory of rolling. [6+10]
4. (a) How the tubes are extruded? Explain with a sketch.
(b) Describe Wire drawing process with a neat sketch. [8+8]
5. (a) Sketch and explain various forging operations used in practice. Mention their applications.
(b) Sketch and explain the sequence of operations involved in making connecting rod by upset forging. [8+8]
6. (a) Explain the advantages and applications of forehand and back hand welding techniques.
(b) What are the advantages of two-stage regulator over single-stage regulator used on gas cylinders. [8+8]
7. (a) Explain the role of light wave standard in precision measurement. How can wave standard be compared with end and line standard?
(b) How the sine bar is used to measure the taper angle on a component? [8+8]
8. (a) What are limit gauges? Sketch and explain the different types of limit gauges.
(b) Distinguish between a measuring instrument and gauge. [10+6]

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1. (a) Write the advantages of Casting over other Manufacturing processes.
(b) Describe various types of Pattern materials. [8+8]
2. (a) Explain the process of making Moulds by Jolt-Squeezing machines.
(b) Describe Oil Fired tilting type Crucible Furnace with a neat sketch. [8+8]
3. (a) Compare the hot rolling and cold rolling process.
(b) Explain the theory of rolling and rolling forces. [8+8]
4. (a) Differentiate between wire drawing and cup drawing operations.
(b) Discuss the forward and backward extrusion processes. [6+10]
5. (a) Describe the differences between hand forging and power forging.
(b) What is forgeability of metal and how can it be determined? [8+8]
6. (a) Differentiate between gas and arc welding processes and mention their applications and limitations.
(b) Describe the characteristics of various flames used in gas welding and their applications. [8+8]
7. (a) How a precision level can be used to determine the flatness and straightness of machine tool beads? How a precision level is more effective than an auto-collimator for such work?
(b) Sketch and explain the construction and working mechanism of bevel protractor. [8+8]
8. (a) What are the various errors present on screw threads and how they are caused?
(b) How the maximum diameter, effective diameter, and core diameter of a screw thread can be measured? [7+9]

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1. (a) Describe various tools used in foundry with neat sketches.
(b) Describe various types of sands used in foundry. [10+6]
2. (a) Describe the furnace used for melting of Non-Ferrous metals with a neat sketch.
(b) Describe the advantages and disadvantages of Hot Chamber and Cold Chamber Die casting processes. [10+6]
3. (a) Compare the hot rolling and cold rolling process.
(b) Explain the theory of rolling and rolling forces. [8+8]
4. (a) Explain how seamless pipes are produced by extrusion.
(b) Explain the following
 i. Embossing
 ii. Punching [8+8]
5. (a) Differentiate between gauging and fullering operations, Mention their applications.
(b) What is forge-welding? Explain the sequence of operations involved in forge-welding. [8+8]
6. (a) Differentiate between gas and arc welding processes and mention their applications and limitations.
(b) Describe the characteristics of various flames used in gas welding and their applications. [8+8]
7. (a) Describe various methods to find out the flatness and accuracy of surface plate.
(b) Describe three methods of testing straight edge one metre long, stating the advantages and sources of error in each. [8+8]
8. (a) Sketch and explain about clearance fit, interference fit and transition fit. Explain their applications.
(b) Explain the meaning of $25 H_7/d_9$ and indicate the importance of each one of the numericals and alphabets. [9+7]

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3. (a) Compare the hot rolling and cold rolling process.
(b) Explain the theory of rolling and rolling forces. [8+8]
4. (a) Explain the Coining process with a neat sketch.
(b) Explain impact extrusion process with a neat sketch. [8+8]
5. (a) Sketch and explain various smithy hand tools and mention their applications
(b) Differentiate 'open fire' and 'stock fire' operations used in smiths forge. Which one is preferred and why? [10+6]
6. (a) Differentiate between gas and arc welding processes and mention their applications and limitations.
(b) Describe the characteristics of various flames used in gas welding and their applications. [8+8]
7. (a) Describe the construction and working principle of sine bar. Why sine bar cannot be used to measured angles greater than 45^0 .
(b) Describe the possible effects in accuracy of measurement due to
 - i. temperature variation
 - ii. elastic deformation. [8+8]
8. (a) What are limit gauges? Sketch and explain the different types of limit gauges.
(b) Distinguish between a measuring instrument and gauge. [10+6]
