

III B.Tech. I Semester Supplementary Examinations, May -2005
MANUFACTURING TECHNOLOGY
(Mechatronics)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Describe various types of additives used in sand moulding.
(b) Describe the properties of moulding sand.
2. Describe Cupola furnace with a neat sketch specifying different zones of heating and Chemical reactions.
3. (a) Briefly explain the importance of various metal working processes.
(b) Describe recovery, recrystallization and grain growth phenomena in metal working process.
4. (a) Differentiate between extrusion and drawing.
(b) Explain the forward extrusion process with a neat sketch.
5. (a) Describe the differences between hand forging and power forging.
(b) What is forgeability of metal and how can it be determined?
6. (a) What are the variables in gas welding and explain their effects on the performance of welding?
(b) Describe the causes of weld distortion and mention its remedies.
7. (a) Describe the construction and working principle of sine bar. Why sine bar cannot be used to measure angles greater than 45.
(b) Describe the possible effects in accuracy of measurement due to
 - i. temp variation
 - ii. elastic deformation.
8. (a) Differentiate between a measuring instrument and a comparator. Explain their applications.
(b) What is best wire size? Derive an equation to find the diameter of best wire size.

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1. (a) Describe CO_2 Moulding Process.
(b) Write the advantages of special sands over silica sands.
2. (a) Explain Machine Moulding Process and indicate its merits.
(b) State the differences between True Centrifugal Casting, Semi-Centrifugal Casting and Centrifuging.
3. (a) Describe various rolling products used in industries.
(b) How the forces in rolling are estimated? Explain the theory of rolling.
4. (a) Explain how seamless pipes are produced by extrusion.
(b) Explain the following
 - i. Embossing
 - ii. Punching
5. (a) Sketch and explain the construction and working of pneumatic hammer used in forging.
(b) What are the advantages of forged parts over the machined or cast parts?
6. (a) What are the advantages of MIG welding and mention the metals to be welded by this process?
(b) What is the principle of resistance welding? Explain about spot welding.
7. (a) How the straightness is checked by straight edge and Auto-collimators?
(b) Sketch and explain the construction and working of inside micrometer.
8. (a) Sketch and explain the construction and salient features of "Sigma Comparator".
(b) How the two-wire method is used to find the effective dia of screw thread.

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1. (a) Write the advantages of Casting over other Manufacturing processes.
(b) Describe various types of Pattern materials.
2. (a) Describe Semi Centrifugal Casting process with a neat sketch.
(b) Differentiate between Die-Casting and Centrifugal Casting.
3. (a) Describe various rolling products used in industries.
(b) How the forces in rolling are estimated? Explain the theory of rolling.
4. (a) Explain the extrusion process used to produce seamless tubes.
(b) Name any two extrusion products and sketch the process used for each.
5. (a) What are the advantages of press forging over the drop forging?
(b) How a hydraulic press and mechanical eccentric press is specified? Explain their advantages and applications.
6. (a) What is meant by weldability and explain the various factors which govern the weldability of metals?
(b) What is Open Circuit Voltage (OCV) and arc voltage and mention the functions controlling the setting up of voltage?
7. (a) How the straightness is checked by straight edge and Auto-collimators?
(b) Sketch and explain the construction and working of inside micrometer.
8. (a) Sketch and explain the construction and salient features of "Sigma Comparator".
(b) How the two-wire method is used to find the effective dia of screw thread.

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1. (a) Define the term pattern? List out various types of Patterns.
(b) Explain the desired properties required for the Pattern materials.
2. (a) Explain the process of making Moulds by Jolt-Squeezing machines.
(b) Describe Oil Fired tilting type Crucible Furnace with a neat sketch.
3. (a) Compare the hot rolling and cold rolling process.
(b) Explain the theory of rolling and rolling forces.
4. (a) Explain the extrusion process used to produce seamless tubes.
(b) Name any two extrusion products and sketch the process used for each.
5. (a) Describe the differences between hand forging and power forging.
(b) What is forgeability of metal and how can it be determined?
6. (a) What are the various inert gases used in welding processes and explain their relative advantages?
(b) How the similar and dissimilar metals are welded by friction welding?
7. (a) How the optical flat is used to test the flatness of surface?
(b) Explain how the flatness and parallelism of the two faces of slip gauge can be tested with the help of optical flat.
8. (a) What are limit gauges? Sketch and explain the different types of limit gauges.
(b) Distinguish between a measuring instrument and gauge.
