

Code: 9A03403

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B.Tech II Year II Semester (R09) Regular & Supplementary Examinations, April/May 2013

MANUFACTURING TECHNOLOGY

(Mechanical Engineering)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 (a) Explain any five types of patterns with sketch giving their applications.
(b) Explain the parting line gate with sketch. Write the advantages?
- 2 Explain the following centrifugal casting methods with sketch:
(a) True centrifugal casting.
(b) Semi centrifugal casting.
- 3 (a) Explain the Volt-ampere (V-I) characteristics of welding power source.
(b) What are the applications and advantages of explosive welding?
- 4 (a) Explain the friction welding process with sketch.
(b) What are the advantages of friction welding process?
- 5 (a) Sketch and describe the different types of rolls used in rolling.
(b) What is the power required in rolling?
- 6 Describe the following cold working process:
(a) Coining.
(b) Roll bending.
- 7 (a) Why can open die forging be made larger than closed die forging?
(b) Why can metals such as aluminium and tin extruded cold?
- 8 (a) Why is EDM widely used? Give the reasons.
(b) What is the difference between the chemical milling and electro chemical milling?
(c) What is principal cause of tool wear in ECM?

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- 1 Explain the steps involved in preparing the sand mould.
- 2 (a) Explain the working of a cupola furnace with a neat sketch.
(b) Write the advantages of a cupola furnace.
- 3 (a) Explain the thermit welding process with sketch.
(b) What are the applications of thermit welding?
- 4 (a) What are the various methods of non destructive testing of welds? List them.
(b) What are the advantages and limitations non destructive testing?
- 5 (a) Mention the materials used for rolls
(b) What are the different types of rolling mills? Explain the tandem and planetary rolling mills with neat diagrams,
- 6 (a) Define blanking, punching and piercing operations.
(b) What are different types of drawing? Explain any one.
- 7 (a) What is cold forging? What for cold heading is used?
(b) Explain the process of rotary forging with help of neat sketch.
- 8 (a) What is principle of working of electrochemical machining (ECM)?
(b) Describe in brief an ECM machine.
(c) What is the function of electrolyte in ECM? List common electrolytes used in ECM.

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- 1 (a) Define the following terms related to casting:
(i) Casting. (ii) Sprue. (iii) Runner. (iv) Chaplets.
(b) Explain the following types of gates with sketch:
(i) Pencil gate. (ii) Branch gate. (iii) Ring gate.
- 2 (a) What is directional solidification? Explain it with the help of a diagram.
(b) Explain the solidification of a pure metal with sketch.
- 3 (a) Explain the carbon arc welding process with sketch.
(b) What are the advantages and limitations of arc welding?
- 4 (a) What are the various types of destructive tests conducted on welds? List them.
(b) Explain the procedure of tensile testing of a weld with sketch.
- 5 (a) Differentiate between two high reversing mill and three high mill. Sketch them.
(b) Discuss the various stages of shape rolling of a component with sketches? What are its applications?
- 6 (a) Draw a sketch of a punch and a die set used for punching operation. Indicate its various parts.
(b) Explain the following terms: (i) Coining. (ii) Embossing. (iii) Trimming.
- 7 (a) A board hammer receives its name because of what feature.
(b) Compare the forging press to a drop hammer press and discuss the energy transmitted to the work.
- 8 (a) Explain why the EBM process is performed in vacuum chamber.
(b) List product applications of EBM.
(c) What is the difference between the EBM and LBM processes?

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- 1 (a) Explain the parting line gate and bottom gate with sketches and their advantages and disadvantages.
(b) Explain the functions of runner extension in a gating system.
- 2 (a) What are the two basic categories of casting processes? Explain.
(b) What are the advantages and disadvantages of sand casting over investment casting?
- 3 (a) What is welding? How the welding processes are classified? Explain.
(b) Explain the various types of welded joints with sketch.
- 4 (a) Explain the two types of impact testing of welds with sketch.
(b) What is the difference between Izod and Charpy impact testing of welds?
- 5 (a) Explain the significance of recrystallization temperature in metal working.
(b) Why is hot working sometimes preferred to cold working in spite of some disadvantages?
- 6 (a) What is drawing? Sketch and explain hot drawing process.
(b) Describe the process of cold spinning stating its advantages and specific uses.
- 7 (a) Explain with simple sketches, the process of forward and backward extrusion.
(b) Explain how the various variables affect the extrusion pressure.
- 8 (a) What is over cutting in EDM process and how it is affected by amperage and frequency?
(b) Describe in brief an EDM machine.
(c) What are the special requirements of the EDM?
