

Code: 9A03403

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II B. Tech II Semester (R09) Regular & Supplementary Examinations, April/May 2012

MANUFACTURING TECHNOLOGY

(Mechanical Engineering)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 What is a pattern? Explain the various pattern allowances provided on the pattern.
- 2 What are the various types of risers? Explain with sketches.
- 3 (a) What is the fuel gases used in cutting? Write the advantages of them.
(b) Describe the seam welding process with neat sketch. Write the applications of seam welding process.
- 4 (a) Explain the procedure of compression testing of a weld with sketch.
(b) What does a destructive tensile and compression tests reveal about a metal?
- 5 (a) What are the common hot working processes?
(b) What are the main advantages and limitations of injection moulding for thermoplastic parts?
- 6 (a) Discuss the various factors and variables, which affect the wire drawing process.
(b) Compare and contrast among various methods available for tube drawing.
- 7 (a) What are the common lubricants used in extrusion?
(b) Describe in detail with neat sketch the working of drop hammers.
- 8 (a) Explain the principle of ultrasonic machining with help of a neat diagram.
(b) What are the main advantages, disadvantages and applications of the USM process?

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Time: 3 hours

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Answer any FIVE questions
All questions carry equal marks

- 1 What are the materials used for pattern making? Explain the relative advantages and disadvantages of them.
- 2 What are the various design considerations for designing the sand mould castings? Explain with sketches.
- 3 (a) Describe the oxy acetylene equipment with sketch.
(b) What are the applications of oxy acetylene gas welding?
- 4 Explain the following two types of bend testing of welds with sketch:
a) Free bend test.
b) Guided bend test.
- 5 (a) What is rolling? Sketch and explain simple rolling process.
(b) Is the pressure of the roll over the metal surface in contact uniform throughout. If not, how does it vary.
- 6 (a) Explain the difference between blanking and punching and mention the useful products in blanking and punching.
(b) Why does a metal usually become thinner in the region of a bend?
- 7 (a) Differentiate between forward and backward extrusion process.
(b) What are the different forging hammers used in forging?
- 8 (a) Explain the principle ECM with help of a suitable diagram.
(b) What is the laser beam machining? Explain its principle of operation with suitable diagram.

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Answer any FIVE questions
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- 1 What are the various types of patterns? Explain with sketch.
- 2 Why is the shrinkage cavities formed in castings? Explain the methods used for eliminating them.
- 3 (a) Explain the plasma arc welding process with sketch.
(b) What are the differences between plasma arc welding and gas tungsten arc welding?
- 4 Explain the following types of hardness testing of welds with sketch:
a) Rockwell hardness test.
b) Brinell hardness test.
- 5 (a) What is re-crystallization temperature? What is the effect of re-crystallization temperature in mechanical working of metals?
(b) Write the dimensions of the billets, blooms and slabs.
- 6 (a) Explain the terms:
(i) blanking
(ii) punching and
(iii) piercing.
(b) With help of neat sketch explain forming process.
- 7 (a) Why is flash is objectionable on a forging?
(b) What is swaging? What type of parts is rotary swaging capable of producing?
- 8 (a) What is electron beam machining? Sketch its set up and indicate its main elements on it.
(b) List the main advantages and disadvantages of EBM and state few of its industrial applications.

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Answer any FIVE questions
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- 1 (a) Explain about various methods available for trapping slag in the pouring basin.
(b) Explain the parameters which effect the pouring time of a given casting to vary.
- 2 Explain the investment casting method (or) lost wax method with sketch.
- 3 What are the design considerations in designing welded joints? Explain.
- 4 (a) Differentiate between TIG welding and MIG welding.
(b) What are the gases commonly used in inert gas shielded arc welding process? Write their applications.
- 5 (a) How are the residual stress removed from cold worked metals?
(b) Why pure metals are more easily cold worked than alloys?
- 6 (a) Briefly describe the spinning processes. What are its applications?
(b) What are the various die stamping operations? Explain with neat diagrams.
- 7 (a) What is impact extrusion? Explain the process with neat sketch and state its specific applications.
(b) What are the common forging defects? How they can reduced?
- 8 (a) What does LASER stands for? How does the metal removal takes place by LASER beam machining?
(b) List advantages, disadvantages and applications of LBM.
