

Code No: R09220301

R09

SET-1

B.Tech II Year - II Semester Examinations, April-May, 2012

PRODUCTION TECHNOLOGY

(Common to AME, ME, MCT)

Time: 3 hours

Max. Marks: 75

**Answer any five questions
All questions carry equal marks**

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- 1.a) Describe with the help of a neat sketch, the working of a sweep pattern stating its advantages?
b) What is the significance of shrinkage in the production of castings? [15]
- 2.a) Differentiate between directional and unidirectional solidification.
b) Compare cold chamber and hot chamber method of die casting. [15]
- 3.a) Write the applications, advantages and limitation of gas welding.
b) Write about spot welding electrodes. [15]
- 4.a) What are the specific areas of application of explosive welding? Explain.
b) Explain the use of laser for welding process. What are the advantages associated? [15]
- 5.a) Compare among cold, warm and hot working of metals.
b) Sketch the sequence of operations involved in rolling a square section to I – Section. [15]
- 6.a) Compare hot spinning and cold spinning.
b) Sketch and explain wire drawing process. [15]
- 7.a) Discuss the effects of friction in open die and closed die forging process.
b) What are the various defects formed in the forged components? How can they be eliminated? [15]
- 8.a) Explain the steps involved in injection moulding of plastics.
b) What are different additive agents in plastics? Explain. [15]

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**Answer any five questions
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- 1.a) What are composite moulds? Why are they used? Where are they used?
b) What are different types of gates? [15]
- 2.a) Write notes on nucleation and grain growth related to casting?
b) What must be the preferred shape of a riser? Explain. [15]
- 3.a) What is flux generally used in gas welding? What characteristics are required for a flux?
b) Differentiate between “leftward” and “rightward” technique used in horizontal welding. How they affect the speed and quality of weld? [15]
- 4.a) Mention the applications, advantages and limitations of TIG welding.
b) Explain the process of MIG welding with neat sketch. [15]
- 5.a) Explain the possible defects in rolling and suggest suitable remedies.
b) On a certain mill the rolling load for 25% reduction is 7KN/mm of width. What is the rolling load when front and back tensions of 120 and 150 MPa are applied?
 $\sigma_0 = 13\text{KN/mm}^2$ and $\alpha = 2\beta$. [15]
- 6.a) What are the similarities and differences between piercing and blanking?
b) Why are multiple passes usually required in wire drawing operations? Explain. [15]
- 7.a) Name any two extrusion products and sketch the process used for each.
b) State the common forging operations mentioning typical application of each. [15]
- 8.a) Explain the steps involved in injection moulding of plastics.
b) Describe the advantages of applying traditional metal forming techniques to forming plastics? [15]

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SET-3

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**Answer any five questions
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- 1.a) Compare the advantages of casting process with other manufacturing processes. Explain skeleton and sweep patterns with simple sketches.
b) Explain the principle of gating system. Explain the function of chaplets in foundry. [15]
- 2.a) Discuss the various casting design considerations in detail.
b) Explain the difference between permanent moulding and die casting processes. State the advantages, limitations and specific applications of die casting process. [15]
- 3.a) Name the different types of flame obtained in Oxy – acetylene gas welding. Describe them in brief with suitable sketches.
b) Explain the thermit welding process with simple sketches. State the specific applications of the process. [15]
- 4.a) Name and describe the welding process that is widely used for cladding of metals.
b) List the various welding defects which commonly occur. Discuss them in brief. [15]
- 5.a) Explain the terms strain hardening, recovery and recrystallization in detail.
b) List the various rolling mill arrangements. Describe any three of them with the help of neat sketches. [15]
- 6.a) Explain the process of tube drawing with a neat sketch.
b) Discuss the factors to be considered for selecting a suitable press for a given job. Describe the working of a hydraulic press with a simple sketch. [15]
- 7.a) Explain the principle of hydrostatic extrusion with a neat sketch. State the advantages and specific applications of the process.
b) Explain the difference between drop forging, machine forging and press forging processes. Explain the working of a drop hammer with suitable sketches. [15]
- 8.a) Distinguish between thermoplastic and thermosetting plastics. List the advantages and applications of plastics.
b) Name and describe the process that is used for making plastic bottles. [15]

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- 1.a) Describe the steps involved in making a mould with simple sketches.
- b) Name the allowances that are given on a pattern. Describe them in brief. [15]
- 2.a) Describe the different types of riser with suitable sketches. Mention the uses of each type.
- b) Name and describe the casting process that is widely used for making cast iron pipes on large scale. [15]
- 3.a) Define welding. Explain the difference between the equipment used for Oxy – acetylene gas welding and Oxy – fuel gas cutting. Describe the principle of Oxy-fuel gas cutting.
- b) Describe any two resistance welding processes with simple sketches. State the applications of these two processes. [15]
- 4.a) Differentiate between soldering, brazing and braze welding. Explain any three soldering methods in brief.
- b) Name the various destructive and non – destructive testing methods for welds. Explain the principle of radiography with neat sketches. [15]
- 5.a) Differentiate between cold working and hot working processes. Compare the properties of cold and hot worked parts.
- b) Define rolling. Describe the cluster mill and the planetary rolling mill with simple sketches. State the product applications of rolling process. [15]
- 6.a) Distinguish between blanking and piercing processes. Describe the process of blanking with a simple sketch.
- b) Explain the process of hot spinning with a neat sketch. State the specific applications of the process. [15]
- 7.a) Differentiate between forward extrusion and backward extrusion. Describe the process of tube extrusion in brief.
- b) List the tools commonly used in Forging. Briefly describe the method of rotary forging. [15]
- 8.a) Discuss the important characteristics of plastics. Explain the transfer moulding process with sketches.
- b) Explain the injection moulding process with suitable sketches stating the specific applications. [15]
