

B.Tech II Year II Semester (R13) Supplementary Examinations December/January 2015/2016

**MANUFACTURING TECHNOLOGY**

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

**PART – A**

(Compulsory Question)

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- 1 Answer the following: (10 X 02 = 20 Marks)
- What are the steps involved in making a casting?
  - Distinguish between directional solidification and progressive solidification.
  - Sketch and explain the Centrifuging process.
  - How Rat tails differ from Cold shuts?
  - What are the different butt joint edge preparations?
  - Illustrate the three types of flames in oxy-acetylene gas welding with neat sketches.
  - Explain the advantages of inert gas medium compared to that of flux materials.
  - Describe briefly any two non-destructive testing methods of welding.
  - What are the characteristics of surface treatment process?
  - Give a brief note on mechanical modifications of work piece surface during surfaces treatment.

**PART – B**

(Answer all five units, 5 X 10 = 50 Marks)

**UNIT – I**

- 2 (a) Define pattern allowance. Explain various allowances usually considered on patterns and core boxes.  
 (b) Explain the factors to be considered in the selection of pattern materials.

**OR**

- 3 (a) What are various moulding materials and their properties? Explain.  
 (b) Classify the different types of cores. Explain their making methods. Give applications.

**UNIT – II**

- 4 (a) Sketch and explain the Investment casting method in detail. Give its applications.  
 (b) What are the casting defects? Explain the reasons for such defects and suggest suitable remedies.

**OR**

- 5 (a) Define gating ratio. Explain pressurized and unpressurised gating systems.  
 (b) Briefly describe the latest developments in cupola melting.

**UNIT – III**

- 6 (a) Briefly describe the Oxy-Acetylene gas cutting technique with a neat sketch.  
 (b) Sketch and explain the Manual Metal Arc Welding process in detail.

**OR**

- 7 (a) Explain how an arc is obtained in arc welding process.  
 (b) With the help of a neat sketch explain the working of:  
 (i) Thermit welding process. (ii) Resistance spot welding process.

**UNIT – IV**

- 8 (a) Give the advantages and limitations of TIG welding over MIG welding.  
 (b) Explain the terms: (i) Soldering. (ii) Adhesive bonding. (iii) Induction welding.

**OR**

- 9 (a) Briefly describe the shielded metal arc welding process? Give its advantages and limitations over gas welding.  
 (b) Classify the different heat affected zones in welding. Discuss the heat flow and its consequences in case of an arc welded joint.

**UNIT – V**

- 10 Highlight the different types of surface treatment process used for welding jobs. Give their advantages and limitations.

**OR**

- 11 Explain the working principle of the following with suitable sketches:

- Overlay coating.
- Diffusion coating.