

USN

--	--	--	--	--	--	--	--	--	--

10ME/AU35

**Third Semester B.E. Degree Examination, Dec.2016/Jan.2017**  
**Manufacturing Processes - I**

Time: 3 hrs.

Max. Marks:100

**Note:** Answer any FIVE full questions, selecting atleast TWO questions from each part.

**PART – A**

- 1 a. Briefly explain the basic steps involved in Sand Casting process. (05 Marks)  
b. What is Pattern? What are the factors to be considered while selecting a pattern material? (05 Marks)  
c. What are the additives used in foundry sand? Mention the purpose and percentage of each additive used. (05 Marks)  
d. Write a brief note on BIS colour coding of patterns. (05 Marks)
- 2 a. Explain briefly the essential requirements of base sand used in foundry. (05 Marks)  
b. With necessary sketches, explain the following : (05 Marks)  
i) Balanced core ii) Kiss core.  
c. With reference to the gating system, explain the following terms : (05 Marks)  
i) Riser ii) Pouring basin iii) Runner iv) Sprue and v) Ingate.  
d. Write a note on Sand Slinger. (05 Marks)
- 3 a. With a neat sketch, explain sweep moulding process. (05 Marks)  
b. With necessary sketches, briefly explain the steps involved in the CO<sub>2</sub> moulding process. List the advantages and limitations of the process. (10 Marks)  
c. Explain squeeze casting technique, with suitable diagram. (05 Marks)
- 4 a. List the factors considered for selecting the melting furnace. (04 Marks)  
b. With suitable sketch, explain electric resistance furnace. (06 Marks)  
c. What are the differences between direct and indirect arc furnaces? (04 Marks)  
d. What are the various zones of Cupola furnace? Write the reactions taking place in each zone. (06 Marks)

**PART – B**

- 5 a. What are the advantages and disadvantages of welding over other manufacturing processes? (06 Marks)  
b. With suitable sketch, explain submerged arc welding process. Mention its advantages and limitations. (08 Marks)  
c. Explain Forward and Backward gas welding techniques. (06 Marks)
- 6 a. Explain the principle of resistance welding. Mention its applications. (06 Marks)  
b. Explain Seam welding process. (06 Marks)  
c. With neat sketches, explain friction welding process. Mention its advantages and limitations. (08 Marks)
- 7 a. Explain the measures to minimize the shrinkage in welded joints. (06 Marks)  
b. What is heat affected zone? Discuss the parameters affecting heat affected zone. (08 Marks)  
c. Explain different welding defects, their causes and remedies. (06 Marks)
- 8 a. Highlight the differences between Soldering and Brazing. (05 Marks)  
b. Briefly explain the different fluxes used in soldering. (06 Marks)  
c. With suitable sketches, explain the various steps involved in the liquid dye penetrate testing of weld components. (09 Marks)

\*\*\*\*\*

Important note: 1. On comparing your answers with the original copy, if there is any discrepancy, you should immediately appeal to the evaluator and/or equations written eg. 42+8=50, will be treated as malpractice.