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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 CO₂ 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)
