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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Third Semester, B.E. - Mechanical Engineering Semester End Examination; Dec - 2017/Jan - 2018 Manufacturing Process - I

Time: 3 hrs Max. Marks: 100 *Note*: Answer *FIVE* full questions, selecting *ONE* full question from each unit. UNIT - I 1 a. List and briefly explain essential parameters for successful production of the casting. 10 b. Explain any five different types of production process. 10 2 a. Explain the sand casting process with flow charts. 10 b. With a neat sketch, explain the melting process in cupola furnace. 10 **UNIT-II** 3 a. Explain the different allowances used in patterns. 10 b. Write a note on different types of binders and additives used in sand moulding. 10 4 a. Define: i) Flowability ii) Green Strength 8 iii) Permeability iv) Collapsibility. b. Explain any four casting defects, and their causes and remedies. 12 **UNIT - III** 5 a. With a neat sketch, explain CO₂ sand moulding. 8 b. With neat sketch, describe Investment shell mould process. List their applications. 12 6 a. List the features of metallic moulds. 6 b. With neat sketch, explain continuous casting process. List their advantages and 14 disadvantages. **UNIT-IV** 7 a. With neat sketch, explain working principle of FSMAW process. 10 b. Explain the working principle of TIG welding process with neat sketch. 10 8 a. List advantages and applications of Resistance welding. 6 b. With neat sketch, explain working principle of: 14 i) Spot welding process ii) Friction welding process. **UNIT-V** 9 a. Briefly explain shrinkage and residual stresses in welding process. 8 b. Explain the formation of different zones during welding process with neat sketch. 12 10 a. Define weldability. What are the factors which affect the weldability? 8 b. Explain different types of welding defects and their causes and Remedies. 12