

B. Tech Degree III Semester Examination, December 2006**SE 302 MANUFACTURING PROCESSES***(2002 Admissions)*

Time : 3 Hours

Max. Marks:100

- I. (a) Classify Engineering materials. (3)
 (b) Write in detail about the technological properties of engineering materials. (10)
 (c) What is heat treatment? Explain the following heat treatment processes of steel (1 + 6)
 (i) Normalising (ii) Hardening
- OR**
- II. (a) What is a solid solution? Explain giving examples. (6)
 (b) Draw the Iron-Carbon phase diagram and mark the various phases, compositions and temperatures in it. (8)
 (c) Explain the Eutectic and Eutectoid reactions of Iron-Carbon alloy system. (6)
- III. (a) What is the principle of electric arc welding?
 (b) What are the different types of electric arc welding? List.
 (c) Describe the process of shielded metal arc welding (SMAW) with a neat sketch.
 (d) Explain the different flames of oxy-acetylene gas welding with neat sketches. Also write down the characteristics and uses of each one. (20)
- OR**
- IV. (a) What is heat affected zone (HAZ) of a weldment? Explain with a neat sketch. (4)
 (b) What are the different welding defects? Sketch them and explain the cause and remedy for each one. (8)
 (c) What are the different non-destructive testing methods of welding? Explain any two methods. (8)
- V. (a) What is pattern allowance? What are the different allowances given in pattern making? Explain. (8)
 (b) What is die casting? Explain the process of die casting with a neat sketch. (8)
 (c) What are the advantages of die casting over sand casting? (4)
- OR**
- VI. (a) What are the desirable properties of moulding sand? (6)
 (b) Describe any two testing procedures of the properties. (6)
 (c) What is investment casting? Describe the process of investment casting with neat sketches. (8)
- VII. (a) What is metal forming? (2)
 (b) What are the different metal forming methods available? List. (2)
 (c) Differentiate between metal forming and metal cutting. (4)
 (d) Explain the process of explosive forming with a neat sketch. (6)
 (e) Explain the process of hydro forming with a neat sketch. (6)
- OR**
- VIII. (a) What are the merits and demerits of
 (i) hot working of metal (ii) cold working of metal (8)
 (b) What is extrusion? What are the different types of extrusion methods? List. (2 + 2)
 (c) Explain any two extrusion processes with neat sketches. (8)
- IX. (a) Classify machine tools. (3)
 (b) What is cutting speed? Explain how cutting parameters like speed, feed etc are calculated using cutting speed. (5)
 (c) What are the different cutting tool materials? Explain. (6)
 (d) Describe the EDM process with a neat sketch. (6)
- OR**
- X. (a) Explain the quick-return mechanism of a shaper with a neat sketch. (10)
 (b) Describe the AJM process with a neat sketch. (6)
 (c) What are the different work holding devices employed in machining? List. (4)

