B. Tech Degree III Semester Examination, November 2005

SE 302 MANUFACTURING PROCESSES

(2002 Admissions onwards)

Time : 3 Hours | Maximum Marks : 100

I. (a) Classify engineering materials. (5)

(b) Explain the various mechanical properties of engineering materials in detail. (10)

(c) Write notes on "solid solutions". (5)

OR

II. (a) Draw the Iron-Carbon diagram and mark the various phases, temperatures and compositions. Also explain the eutectic and eutectoid reactions. (10)

(b) Explain the following heat treatment processes of steel and mark them in Iron-Carbon diagram :

(i) Normalising (ii) Annealing

(iii) Hardening (iv) Stress relieving. (10)

III. (a) Describe electron beam welding process with a neat sketch. List out the merits and applications of this process. (10)

(b) Describe electric arc welding process with a neat sketch, highlighting operating parameters. (10)

OR

IV. (a) Explain the principle of resistance welding and describe resistance spot welding with a neat sketch. (10)

(b) What are the common welding defects? List them and give causes and remedy for each one. (10)

V. (a) What is a pattern? What are the different types of patterns? List. Draw figure and explain *any four* types. (10)

(b) What are the different pattern allowances given while designing a pattern? Explain. (10)

OR

VI. (a) Explain the process of making a green sand mould using a split pattern, with neat sketches. (10)

(b) Describe the following testing procedures of moulding sand :

(i) Permeability (ii) Moisture content test

(iii) Fineness test (iv) Clay content test. (10)

VII. (a) Explain the process closed-die forging by –

(i) Drop forging (ii) Press forging. (12)

(b) Explain the process of explosive forming with a neat sketch and list the merits and applications. (8)

OR

VIII. (a) Define 'Extrusion'. Explain the process and equipment of hot extrusion with neat sketches by –

(i) Direct method (ii) Indirect method. (12)

(b) Describe hydro forming process with a neat sketch and give the advantages and limitations. (8)

IX. (a) Classify cutting tool materials and highlight the characteristics of each one. (12)

(b) With the help of a neat sketch explain the process of electrical discharge machining (EDM). (8)

OR

X. (a) What is a Machine Tool? Classify machine tools based on (i) Accuracy (ii) Process/operations. (8)

(b) Explain the quick return mechanism and the feed mechanism of a shaper with neat sketches. (12)

***