Exam.Code:0939
Sub. Code: 6705

2122

B.E. (Mechanical Engineering)

Third Semester

MEC-305: Manufacturing Processes

Time allowed: 3 Hours

Max. Marks: 50

NOTE: *Attempt <u>five</u> questions in all, including Question No. I which is compulsory and selecting two questions from each Part.*

x-x-x

1	(a) How the corrosion resistance of steel can be increased? (b) With what process and materials, the railway rails are normally made of? (c) Draw the structure of face-centred cubic lattice and body-centred cubic lattice (d) What is Gamma iron? (e) Which substance can be added to iron powder to improve the compressive strength of bearing? (f) Define with neat digrams: a. Perforating b. Notching (g) Which method of manufacturing is used for the production of appliances like the fridge and vacuum cleaner? Explain in brief. (h) Sketch the hot chamber die casting process? (i) With which process, the porous product can be effectively produced? (j) List the steps involved in powder metallurgy?	10
	PART-A	
2.	(a) Draw and explain a typical creep curve for ductile metal and explain the regions. (b) List out various industrially important aluminum alloys. Write their composition, properties and applications.	5 5
3.	a) Explain the electro-magnetic forming with a sketch. List its advantages, disadvantages and applications b) A cold rolled steel cup with an inside radius 30 mm and a thickness 3 mm is to be drawn from a blank of radius 40 mm. The shear yield stress and the maximum allowable stress of the material can be taken as 210 N/mm2 and 600 N/mm2, respectively. Determine the drawing force, assuming that the coefficient of friction u = 0.1 and ß= 0.05 Determine the minimum possible radius of the cup which can be drawn from the given blank without causing a fracture.	5 5
4.	a) A compound die will be used to blank and punch a large washer out of 6061ST aluminum alloy (the allowance is a = 0.06). sheet stock 3.50 mm thick. The outside diameter of the washer is 50 mm and the inside diameter is 15 mm. Determine (a) the punch and die sizes for the blanking operation, and (b) the punch and die sizes for the punching operation. b) Briefly explain any four forging defects.	6 4
	PART B	
5.	a) Explain different types of casting defects with neat sketches and the testing methods. b) Describe various remedial methods for the removal of defects.	5 5
6.	a) Discuss with neat sketches, the various types of patterns for making a casting b) Explain the properties desired in a good moulding sand.	5 5
7.	a) Write a brief note on pollution control in foundries. b) Discuss the casting process by which cast iron pipes are produced	5 5

x-x-x