MCL131 MANUFACTURING PROCESSES I	B.Tech. MINOR –II LH108
Max.Marks : 40	Date: 24.03.18- Saturday,4.00PM-5.00PM

1. Write your name, entry number and group number on BOTH the answer sheets.
2. PART A and PART B should be answered separately
3. Be brief and specific in your answers. Draw suitable, neat sketches wherever required.

PART A

1. Define gating ratio. Discuss the advantages and disadvantages of both the gating ratios. (2+4=6)
2. Write on liquid forging with a neat sketch and specify the application for the same process (5+1=6)
3. Find out the diameter of a riser for the given casting having a rectangular shape 50mm x50 mm x 10 mm, using modulus method. Calculate the shape factor also. [Make the suitable assumptions and write the assumptions made] (4+1=5)
4. How do you promote proper thermal gradient in directional solidification (3)

PART B

5. Define effective strain and show that in uniaxial tension, effective stress and effective strain are equal to longitudinal stress and longitudinal strain respectively. (3)

6. a) What is the purpose of flash in impression die forging? Name the most common steps in drop forging of a component in sequence. (4)

   b) An aluminum slab of dimensions 500mm x 80mm x 20mm is compressed between two flat dies in an open die forging process at room temperature without any change in length. If the required reduction in height is 50%, calculate the necessary forging load. The strain hardening behaviour of the material is given by $\sigma_0 = 400\ \varepsilon^{0.3}$MPa. Assume coefft. of friction to be 0.1. (6)

7. a) A number of cold rolling passes are required on a 2-high rolling mill to reduce the thickness of a plate from 48mm to 22mm without any change in width. The roll diameter is 700 mm and the coefficient of friction at the roll-work interface is 0.1. It is required that the draft in each pass must be same. Determine a) minimum number of passes required, b) draft in each pass and c) total engineering strain and total true strain applied. (5)

   b) Name the problems that occur due to bending of rolls along their length in cold rolling of thin sheets. What is the most common solution to prevent these problems? (2)