

Full marks 35

Time 2h

First half

1. A steel component having the shape of the letter 'W' is to be cast in sand mould. Each arm of the component has the uniform cross section of 50cm×50cm and length of 250cm. All the included angles may be chosen suitably. Suggest the gating system and scheme for the location of risers. 7_{1/2}

Or

Determine the expression for the stress required for reduction of thickness of a slab during deformation through a wedge shaped die. Assume plane strain deformation condition. 7_{1/2}

2. Write notes on (any two) 5×2
- (a) Indirect compression
 - (b) Deviatoric stress
 - (c) Yield criteria
 - (d) Gating system of a casting

SECOND HALF

Answer questions of this half in a separate answer-script
Answer Question No. 6 and either Question No. 4 or Question No. 5
Full marks for this Half is 17½

- 3 (i) Draw a 'Horizontal knee and column type' milling machine and (ii) the 'head' part of the vertical knee and column type machine showing the major components for both and briefly describe their functions. [7½]

OR

4. Draw a 'Lathe Machine' illustrating its major components and describe their functions. [7 ½]

5. Write notes on any two:

- (i) Electrochemical Machining Process
- (ii) Electrical Discharge Machining Process
- (iii) Injection Moulding of thermoplastic plastics
- (iv) Drilling, Boring and Tapping operations in a Drilling Machine [5+5=10]