

(3 Hours)

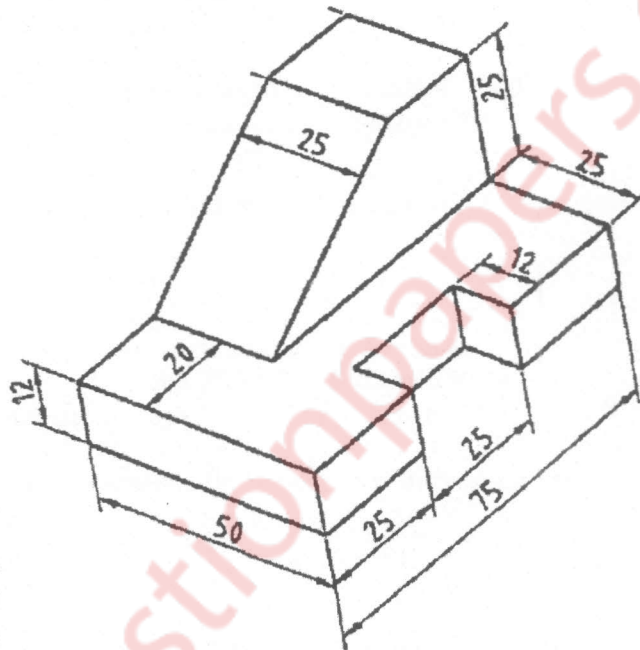
Total Marks : 80



- N.B : 1. Question no. 1 is **compulsory**
 2. Attempt any **THREE** questions out remaining **FIVE** questions.
 3. All questions carry equal marks.
 4. Assume suitable data if necessary.

Q.1 The component shown below is to be sand cast. Material for component is C.I. 20
 Assuming suitable data answer the following:

- Select parting line.
- Design and sketch the required pattern.
- Design the gating system.
- Calculate the required size of riser.
- Sketch the views of mould showing gating system and riser.



(Note: All dimensions in mm.)

- Q.2** Give reason for the following: 20
- a. Zinc alloys are hot chamber die cast.
 - b. Chills is used for different reasons in sand casting.
 - c. Allowance is provided on the pattern.
 - d. Taper sprue is used in sand mould casting.
 - e. Sand required for core should be superior than the mould in sand casting.
 - f. Forgings are inherently stronger than casting
 - g. Why flash and gutter are used in forging.
 - h. Permeability of sand mould must be adequate.
- Q.3** **a.** A 65 x 65 mm section is to be rolled into diameter of 30 mm. The following data is available: 15
Mill Specification: 450/6,
 λ average: 1.4.
Forward Slip: 0.12
Rolling temperature- assumed to be constant: 1200°C.
Design the roll passes required and sketch all the roll passes with dimensions
- b.** Give classification of rolling mills according to the product roller. 5
- Q.4** Differentiate the following: 20
- a. Neutral angle and Angle of contact in rolling.
 - b. Differentiate between Blind riser and Open Riser.
 - c. Differentiate between Forward Extrusion and Backward back ward Extrusion.
 - d. Differentiate between the Hot chamber die casting and Cold chamber die casting.
- Q.5** Write a short note on: 20
- a. Cupola furnace.
 - b. Explain Defects in sand cast components and their remedies.
 - c. Write a short note on Shell Mould casting
 - d. Explain Hydrostatic Extrusion.
- Q.6** Explain the following: 20
- a. Defects in rolled products.
 - b. What is forgeability? Explain with sketches forging defects.
 - c. Die casting defects and their remedial action.
 - d. Working principle of belt drop hammer.