

QP CODE: 39305

Time: 3 Hours

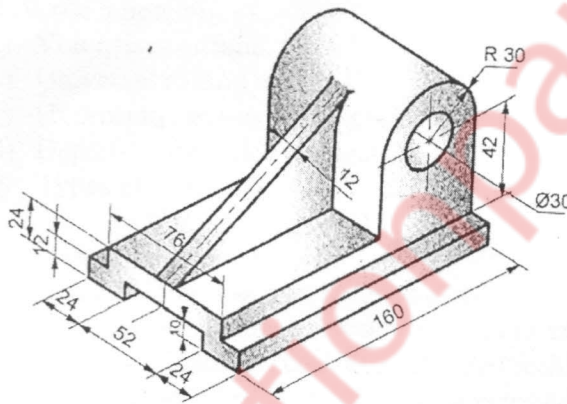
Marks: 80

1. Figures to the right indicate full marks.
2. Attempt any four questions including Question No.1 is compulsory.
3. Illustrate answers with sketches if required.
4. Assume any suitable data wherever necessary.



Q.No.1. The component shown in the figure no.1 is to be sand cast. Material of the component is steel. Assuming suitable data answer the following:

- a) Select parting line.
- b) Design and sketch the required pattern and core boxes.
- c) Design the gating system.
- d) Calculate the required size of riser using Caine's method.
- e) Sketch the views of mold showing gating system and riser.



(All dimensions are in mm)

Figure 1

Q.No.2. Answer the following:

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- a) Difference between pattern and mold.
- b) Explain working principle of high pressure molding process.
- c) Explain squeeze molding process.
- d) Types of core boxes.
- f) Explain directional and progressive solidification.

- Q.No.3. Give reasons for the following: 20
- Pressurized gating system is used in Cast iron casting
 - Presses are used in manufacturing of thinner forgings.
 - Forgings are inherently stronger than castings.
 - Pressure required in forward extrusion is more as compared to backward extrusion.
 - Double allowance is provided on master pattern.
 - Hot chamber die casting process is not suitable for high melting point metals and alloys like Al and Cu.
 - Fillet and corner radii are provided on forging dies.
 - Saw dust is used in forging operation.
- Q.No.4. Answer the following.
- Explain cold box casting process. 05
 - Discuss working principle of board drop hammer. 05
 - How parting line is selected in forging die? 05
 - What are the pre-forming operations carried out in multi-impression forging? Explain their purpose. 05
- Q.No. 5: Write a note on: 20
- Von Mises criteria.
 - Universal rolling mill.
 - Hydrostatic extrusion process.
 - Defects in extruded product.
 - Types of cores.
- Q.No. 6. Answer the following
- Explain defects in casting products. 06
 - How seamless tubes are manufactured in extrusion process? 05
 - Define moldability, collapsibility, permeability and grain fineness number 04
 - How permeability of molding sand is tested? 05
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