



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

Q.No.1. The component shown in the figure no.1 is to be sand cast. Material of the component is C.I. Assuming suitable data answer the following: 20

- 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 Modulus method.
- e). Sketch the view of mold showing gating system and riser.

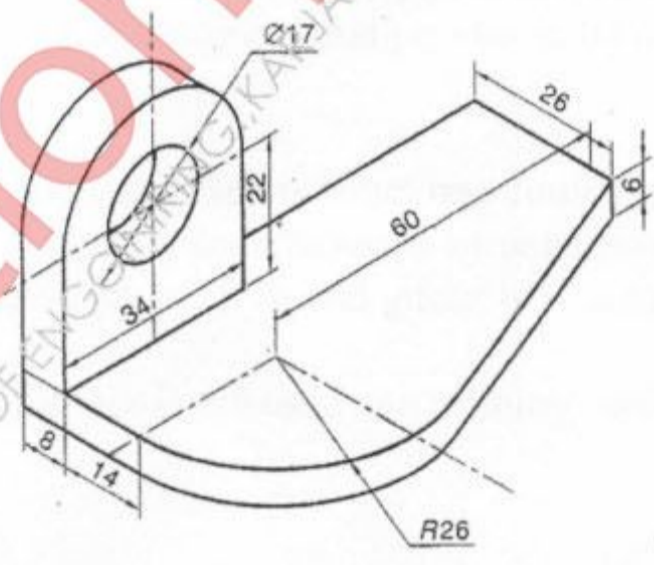


Figure no.1
 All dimensions are in mm.

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Q.No.2. Give reasons for the following:

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- Tapered sprues are used in sand mold casting process.
- Riser is placed on thicker portion of the casting.
- Runner extension is provided in sand mold gating system.
- Fillet and corner radii are provided on forging die.
- Pressure required in forward extrusion is more than that of backward extrusion for same component.

Q.No.3. Differentiate between

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- Shell and Investment casting process.
- Wooden pattern and metallic pattern.
- Angle of contact and neutral angle in rolling process.
- Forward extrusion and Backward extrusion.
- Cold forming and hot forming process.

Q.No.4. a). Explain hot box casting process in detail.

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b). Explain working principle of high frequency Induction furnace.

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c). Explain necessary condition of biting in rolling process.

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d). Differentiate between hammers and presses in forging operation.

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Q.No.5. a). What are the defects in rolled product one could anticipate?

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b). How seamless tubes are manufactured by extrusion process?

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c). What are the Functions of flash and gutter in closed die forging operation?

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d). Why induction furnace is not used as a refining unit?

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Q.No.6. Write a note on

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a). Cold box casting process.

b). Defects in extruded products.

c). Cold chamber die casting process.

d). Pattern allowances.