

Mechanical Engineering Drawing

Time: 4 Hrs.]

Prelim Question Paper

[Marks : 100

- Instructions :**
- (1) All questions are compulsory.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data if necessary.
 - (5) Preferably, write the answers in sequential order.

1. (a) Draw conventional representation for any **SIX** of the following : [12]

- (i) Concrete and insulating materials
- (ii) Splined shaft.
- (iii) Revolved sections.
- (iv) Knurling
- (v) Ball bearing.
- (vi) Spur gear.
- (vii) Rubber
- (viii) Helical compression spring of wire of rectangular cross-section.

(b) Attempt any **TWO** of the following : [8]

- (i) State the meaning of the following symbol :



(3) 21H₆

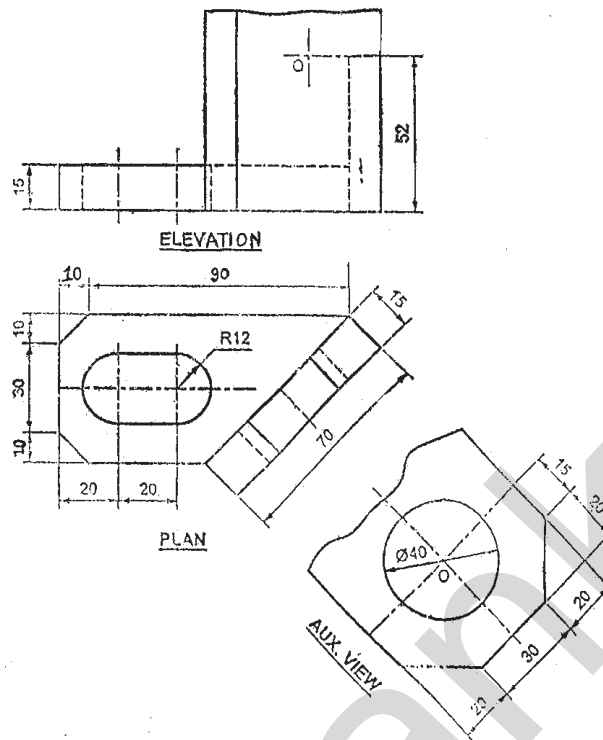
(4) 21K₅

- (ii) The shaft size is $\phi 35^{0.04}$ and hole size is $\phi 35^{0.00}$. Determine type of fit between them.

(iii) Draw the symbols for following features which are controlled in geometrical tolerancing.

- (1) flatness
- (2) cylindricity
- (3) angularity
- (4) profile of any surface

2. (a) Figure shows incomplete FV and partial auxillary view of bracket. [12]
Redraw the given views and complete front view, showing all details.



- (b) Attempt any **TWO** of the following:

[8]

- (i) Two rectangular plates are to be welded with each other along the length. The thickness and length of both the plates is 12 mm and 60 mm respectively. The plates are to be 'U' butt welded with convex counter. Prepare welding drawings.
- (ii) Giving symbols illustrate.
 - (1) Convex fillet weld
 - (2) Flat double v-butt weld.
 - (3) spot weld
 - (4) Seam weld
- (iii) State the meaning of the symbol shown in figure.



3. Attempt any **TWO** of the following :

[20]

- (a) A vertical square prism, base 60 mm side is completely penetrated by a horizontal square prism, base 40 mm side so that their axes are 25 mm apart. The axis of the horizontal prism is parallel to V.P., while faces of both prisms are equally inclined to V.P. Draw the projections showing lines of intersection. Assume suitable length of prisms.
- (b) A vertical cone, base 80 mm diameter and axis 100 mm long resting on H.P. is penetrated by a horizontal cylinder of 50 mm diameter. The axis

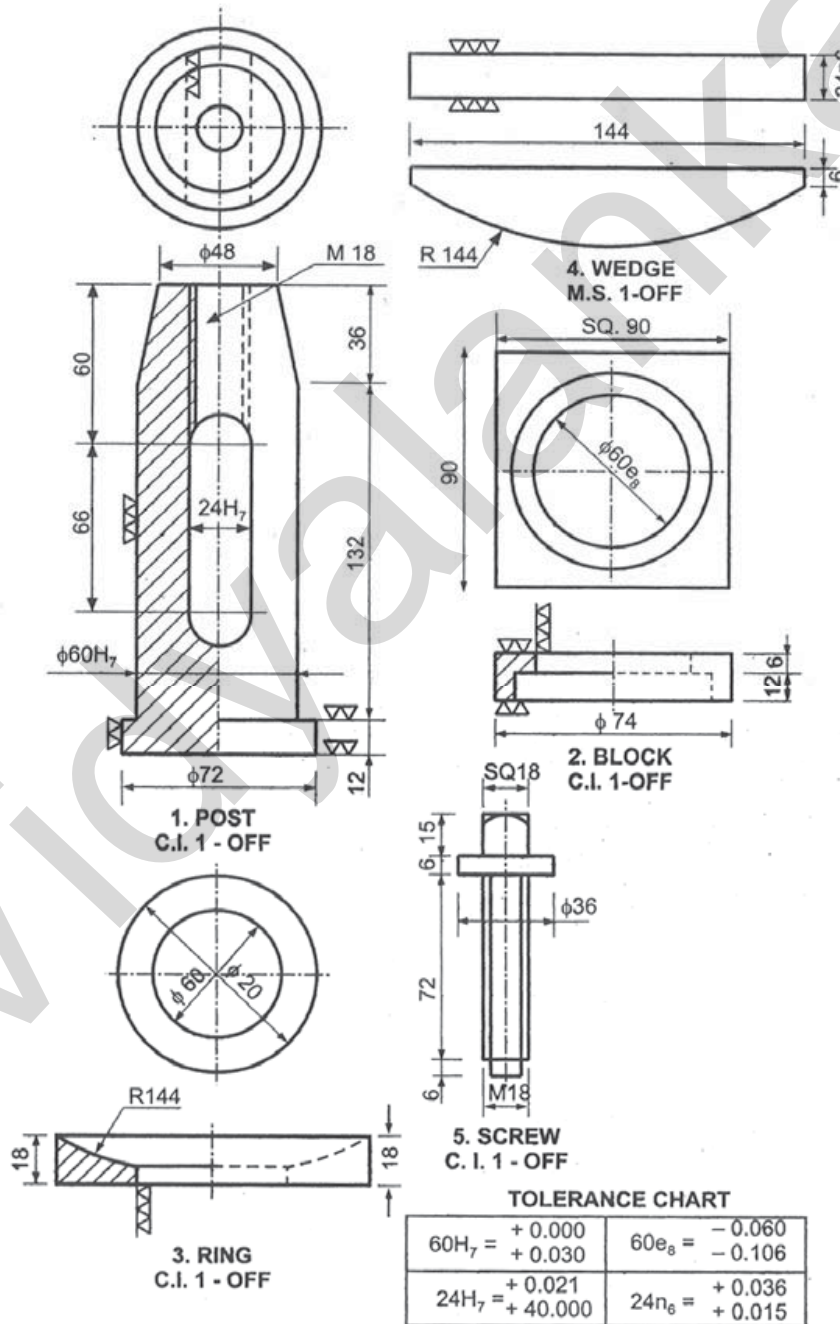
of cylinder is 30 mm above the base of cone and 10 mm in front of the axis of cone. Draw the projections showing curves of intersection. Assume suitable length of penetrating cylinder.

- (c) A vertical cylinder of 80 mm diameter and 100 mm length is penetrated by another cylinder of same size. The axis of penetrating cylinder is parallel to H.P. and V.P. and 10 mm away from the axis of vertical cylinder. Draw the projections showing curves of intersection.

4. Attempt any **ONE** of the following :

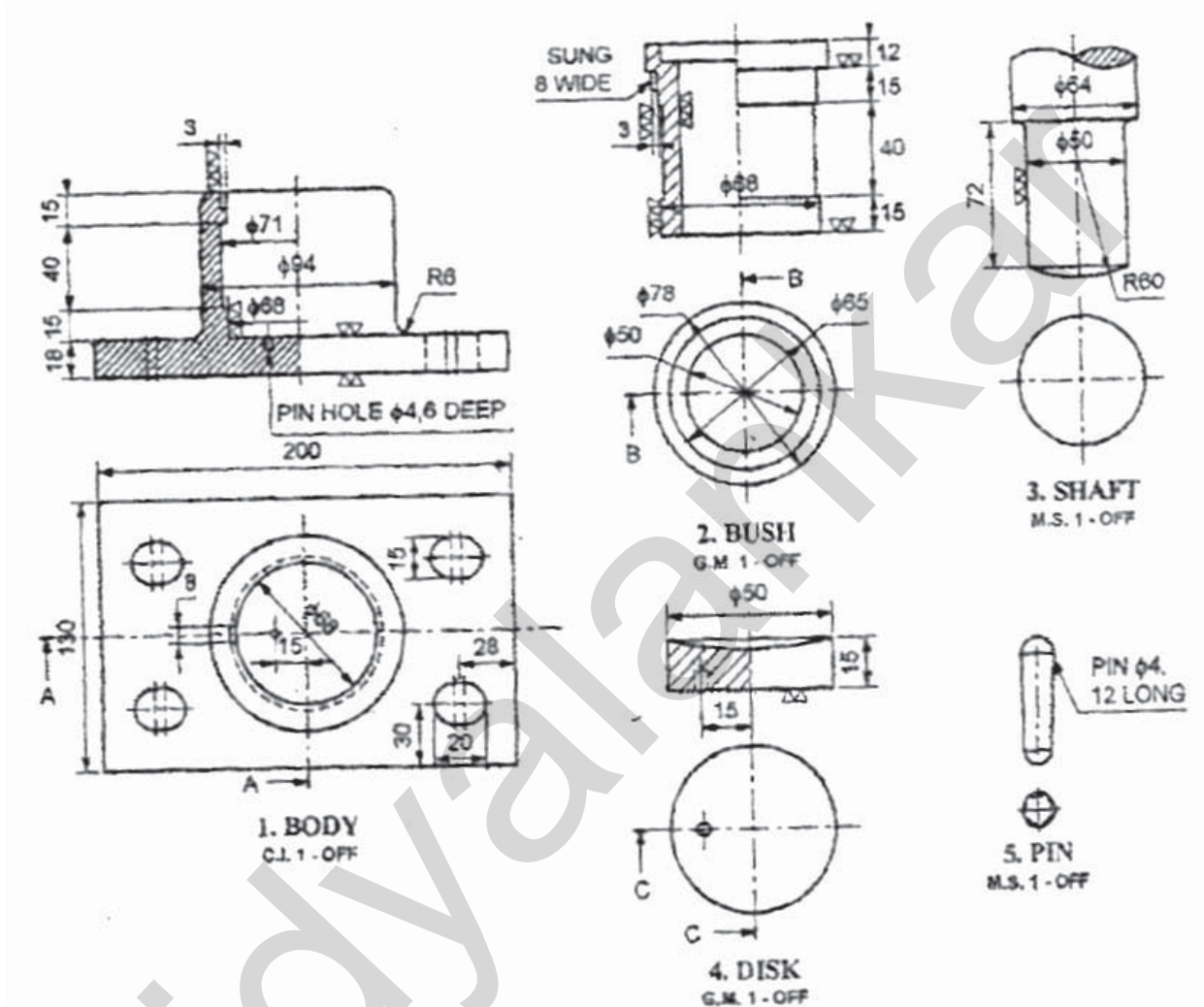
[20]

- (a) Figure show the details of lathe tool post. Draw sectional F.V. and T.V. of the assembly. Also prepare bill of material.



Details of lathe tool post

- (b) Figure shows the details of foot step bearing. Draw the following views of assembly:
- (i) Sectional front view.
 - (ii) Top view.
 - (iii) Prepare bill of materials



5. Attempt any **ONE** of the following :

[20]

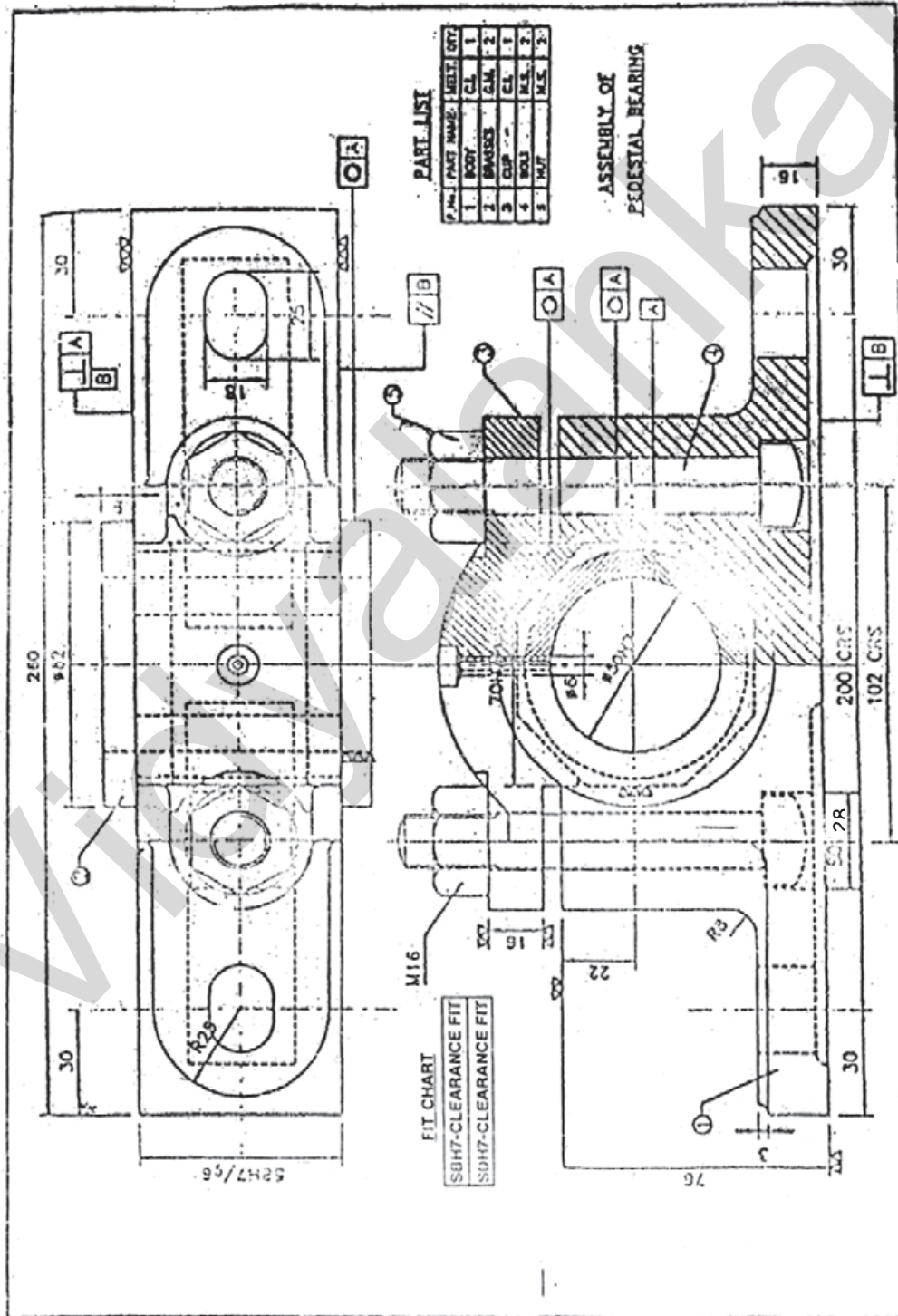
(a) Figure shows orthographic views of plummer block: Draw the detail drawing following parts.

(i) Body – Half sectional FV and TV

(ii) Cap – FV and TV

(iii) Brasses FV and SV

(iv) Indication of tolerances, geometrical tolerances, dimension, fits etc.



(b) Figure 4 shows the half sectional front view and side view of an assembly of crosshead. Draw the part drawing of the components.

