4 Hours/100 Marks   Seat No.

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.*

MARKS

1. A) Draw conventional representation for **any six** of the following :   **(2×6=12)**
   a) Concrete and insulating materials.
   b) Splined shaft.
   c) Worm gear.
   d) Internal thread.
   e) Helical spring with flat end.
   f) Roller bearings.
   g) Revolved sections.
   h) Knurling.

   B) Attempt **any two** :   **(2×4=8)**
   a) Refer Figure 01. What is the meaning of symbols at 'X' and 'Y' ?
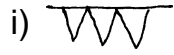

Figure 1 Q. No. 1 (B)

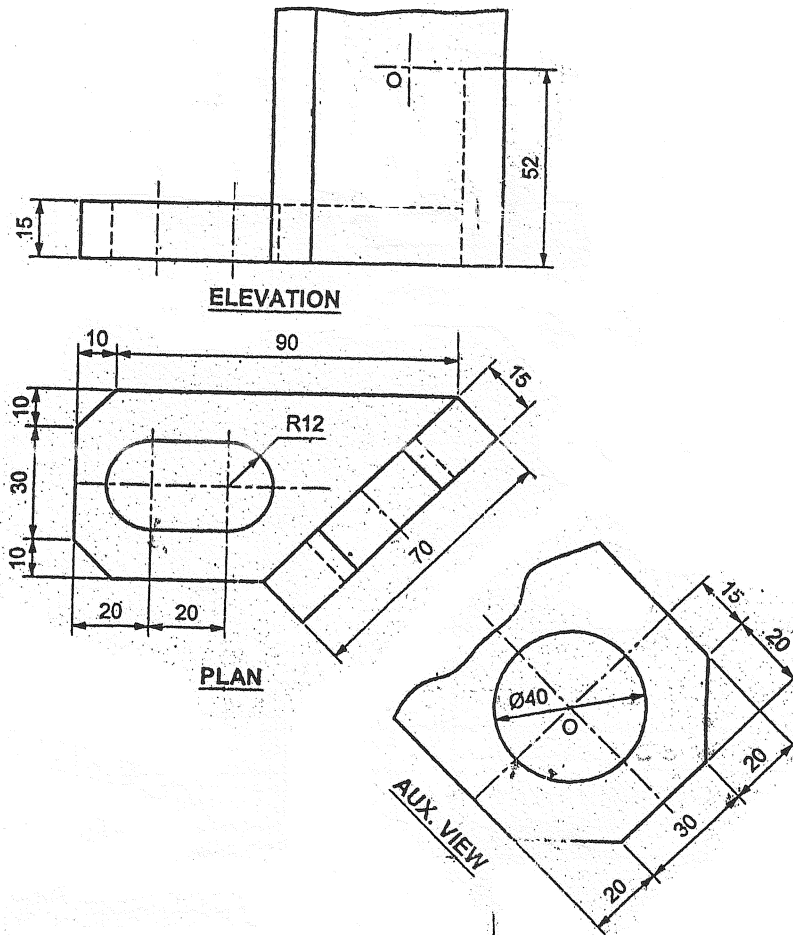b) State the meaning of the following symbole :

   i) ⌄⌄⌄

   ii) ◎ | A

   iii) $21H_6$

   iv) $21K_5$

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

2. A) Figure 02 shows incomplete FV and partial auxillary view of bracket. Redraw the given views and complete front view, showing all details. **12**


Q. 2(A) - Figure 02

MARKS

B) Solve **any two** :   **(2×4=8)**

  1) Draw symbols for following features used in geometrical tolerances.

    a) Concentricity

    b) Parallelism

    c) Perpendicularity

    d) Profile of any surface.

  2) The circular shaft of diameter 30 mm at the end welded to flate plate of thickness 8 mm by circular fillet weld. Prepare welding drawing.

  3) State meaning numbers in following symbol.
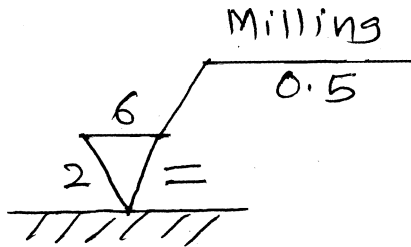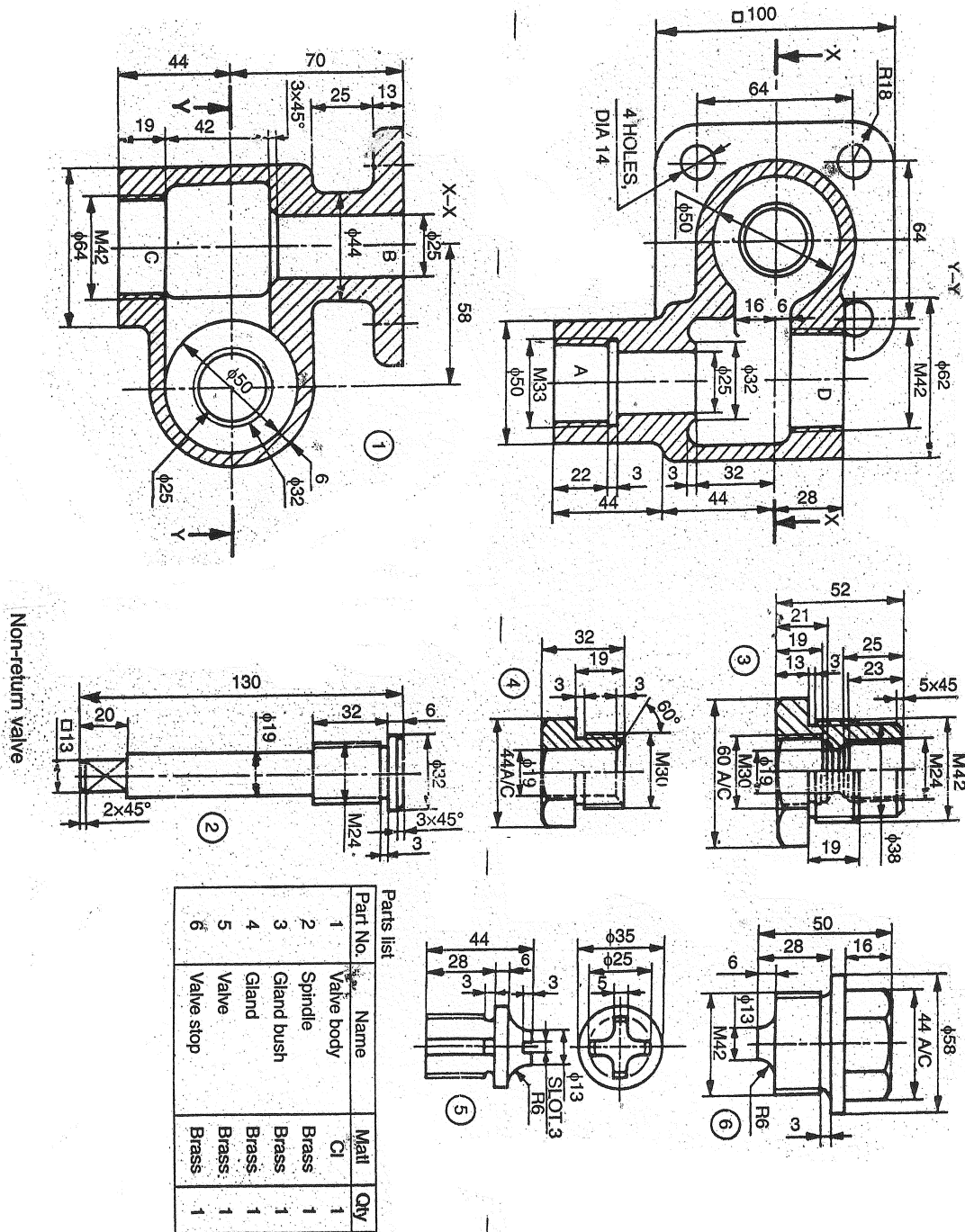

3. Solve **any two** :   **(2×10=20)**

  a) A vertical cone base 80 mm diameter and axis 110 mm long is penetrated by a horizontal cylinder, 45 mm diameter. The axis of the cylinder is 25 mm above the base of cone, is parallel to the VP and is 10 mm away from axis of cone. Draw the projections of solids showing curves of intersection.

  b) A vertical cylinder of 50 mm diameter is completely penetrated by another cylinder of same size. The axis of penetrating cylinder is parallel to both the HP and VP, and is 8 mm away from axis of vertical cylinder. Draw projections of solids showing curves of intersections. Assume suitable lengths of cylinders.

  c) A vertical square prism base 50 mm side and height 90 mm has a face inclined at 30° to VP. It is completely penetrated by another square prism base 40 mm side and axis 100 mm long, faces of which are equally inclined to the VP. The axes of two prism are parallel to VP and bisect each others at right angle. Draw projections of solids showing curves of intersection.

4. Attempt **any one** : **(1×20=20)**

a) The details of pipe vice are shown in figure 03. Draw the assembly drawing as follow :

   i) Sectional front view. **10**

   ii) Left hand side view. **6**

   iii) Show dimensions and tolerances. **2**

   iv) Prepare bill of materials. **2**

Parts list			
Part No.	Name	Matl.	Qty.
1	Vice base	CI	1
2	Movable jaw	CI	1
3	Set screw	MS	2
4	Screw rod	MS	1
5	Handle bar	MS	1
6	Handle bar cap	MS.	2

Q. 4(a) - Figure 03

Marks

b) Figure 04 shows details of non-return valve. Draw assembly drawing showing

   1) Sectional front view.   **10**

   2) Top view.   **6**

   3) Show dimensions and tolerances, prepare bill of materials.   **4**

Part No.	Name	Matl	Qty
1	Valve body	CI	1
2	Spindle	Brass	1
3	Gland bush	Brass	1
4	Gland	Brass	1
5	Valve	Brass	1
6	Valve stop	Brass	1

Parts list

Non-return valve

Q. 4(b) - Figure 04

5. Attempt **any one** :   **(1×20=20)**

   a) Figure 05 shows orthographic views of plummer block : Draw the detail drawing
      following parts.

      i) Body – Half sectional FV and TV   **10**

      ii) Cap – FV and TV   **4**

      iii) Brasses FV and SV   **4**

      iv) Indication of tolerances, geometrical tolerances, dimension, fits etc.   **2**

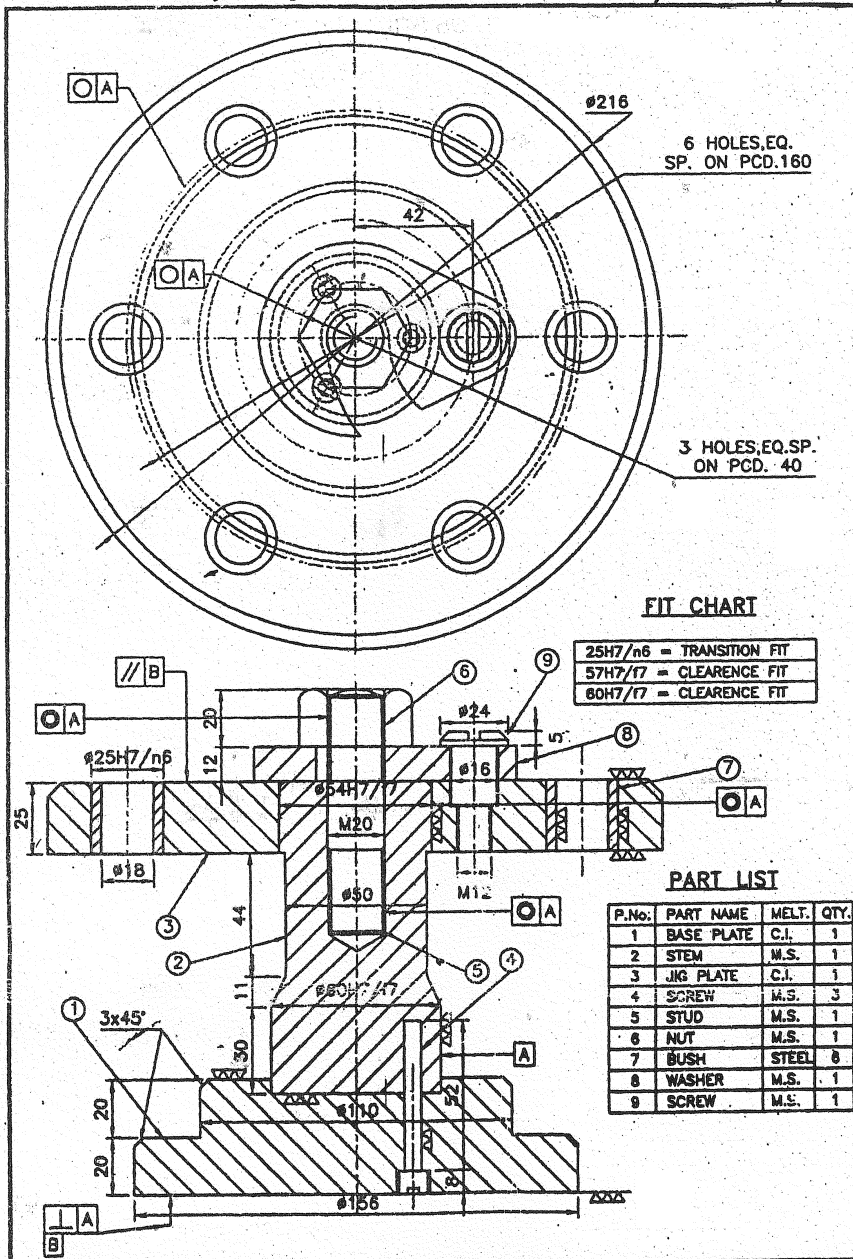**Q. 5(a) - Figure 05**

b) Figure 06 shows assembly of drill jig.
   Draw detail drawing of following parts :
   i) Jig plates FV and TV   **6**
   ii) Stem - sectional FV and TV   **8**
   iii) Base plate FV and TV   **6**
   Show dimensions, fits, tolerances.

FIT CHART

25H7/n6 =	TRANSITION FIT
57H7/f7 =	CLEARENCE FIT
60H7/f7 =	CLEARENCE FIT

PART LIST

P.No.	PART NAME	MELT.	QTY.
1	BASE PLATE	C.I.	1
2	STEM	M.S.	1
3	JIG PLATE	C.I.	1
4	SCREW	M.S.	3
5	STUD	M.S.	1
6	NUT	M.S.	1
7	BUSH	STEEL	8
8	WASHER	M.S.	1
9	SCREW	M.S.	1

Q. 5(b) - Figure 06