

22341

23124

4 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following :

10

- (a) Draw the conventional representation of the following :
 - (i) Splined Shaft
 - (ii) Diamond knurling
- (b) Draw the conventional representation of the following :
 - (i) cap – in pipe joint
 - (ii) 90° Elbow – in pipe joint



- (c) Draw the conventional representation of following machine components :
- (i) Rack and Pinion
 - (ii) Ball Bearing
- (d) Define 'Taper'. Draw its standard convention.
- (e) The shaft has size $\phi 20_{-0.04}^{-0.03}$ and hole has size $\phi 20_{-0.04}^{+0.02}$. Determine type of fit between them.
- (f) State the meaning of symbol shown in Fig. No. 1

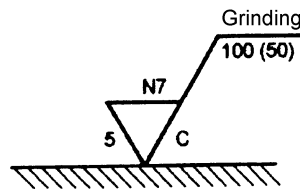


Fig. No. 1

- (g) Draw the actual view and conventional representation of :
- (i) External screw thread
 - (ii) Semi-elliptic leaf spring with centre band

2. Attempt any TWO of the following :

12

- (a) A vertical cylinder of 65 mm diameter is penetrated by another cylinder of 60 mm diameter. The axis of penetrating cylinder is parallel to both H.P. and V.P. and 12 mm away from the axis of vertical cylinder. Draw the curves of intersection on projection of cylinders. Assume suitable length for both cylinders.

- (b) A vertical square prism side of base 50 mm and height 80 mm long is kept on H.P. on its base with all faces equally inclined to V.P. It is completely penetrated by horizontal cylinder axis of which is parallel to V.P. and 6 mm away from that of the axis of prism. Diameter of cylinder is 40 mm and height 90 mm long. Draw projections of solids showing the curves of intersection.
- (c) A cone with base diameter 90 mm and height 85 mm long is kept on H.P. on its base. It is completely penetrated by a horizontal cylinder of 40 mm diameter and 110 mm long. Axis of cylinder is parallel to V.P. and intersecting the axis of cone at a distance of 25 mm above the base of cone. Draw the projection of solids showing curves of intersection.

3. (A) Attempt any ONE of the following :

4

- (a) What is the meaning of symbol at x and y ?

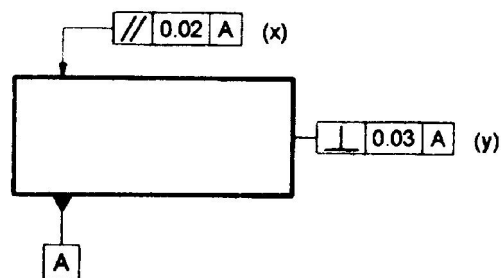


Fig. No. 2

- (b) Show the position of unilateral and bilateral tolerance with the help of block diagram and zero line.

(B) Attempt any TWO of the following :

- (a) A hexagonal pyramid side of base 30 mm and axis 80 mm long is kept on H.P. on its base with a side of base parallel to V.P. It is cut by an AIP passing through a point 30 mm from apex on axis of pyramid and inclined to H.P. at 40° . Draw the development of lateral surface of pyramid removing portion containing apex.
- (b) Fig. No. 3 shows the elevation of a cylinder kept on H.P. on its base. Cylinder is cut by two cutting planes $C_1 - P_1$ and $C_2 - P_2$. Draw the development of lateral surface of cylinder.

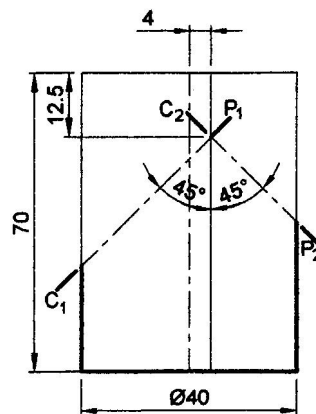


Fig. No. 3

- (c) A cone base diameter 50 mm and height 65 mm is kept on H.P. on its base a semicircular hole of diameter 25 mm, the axis of which is parallel to both H.P. and V.P. is drilled through it. The flat face of semicircular hole is parallel to H.P. and edge bisecting the axis of cone. Draw the development of lateral surface of cone.

4. Attempt the following :

Fig. No. 4 shows the assembly of universal coupling. Attempt any **two** of the following :

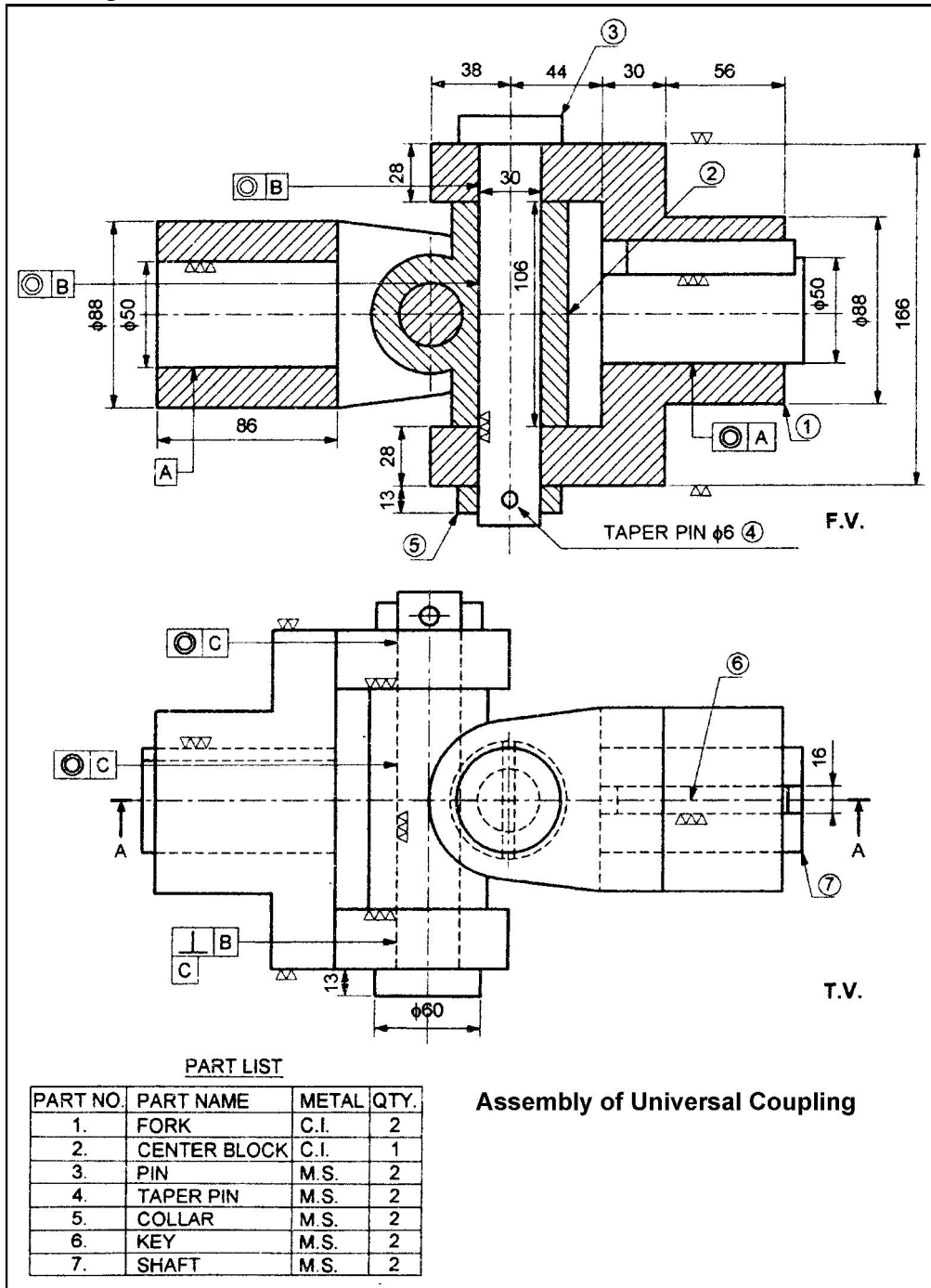


Fig. No. 4

- (a) Draw the sectional front view and top view of fork.
- (b) Draw the front view and top view of centre block and pin.
- (c) Draw the front view and top view of collar, shaft and key.

5. Attempt any ONE of the following :

(a) Details of foot step bearing are shown in Fig. No. 5. Draw

(i) Full sectional front view of assembly.

(ii) Top view of assembly.

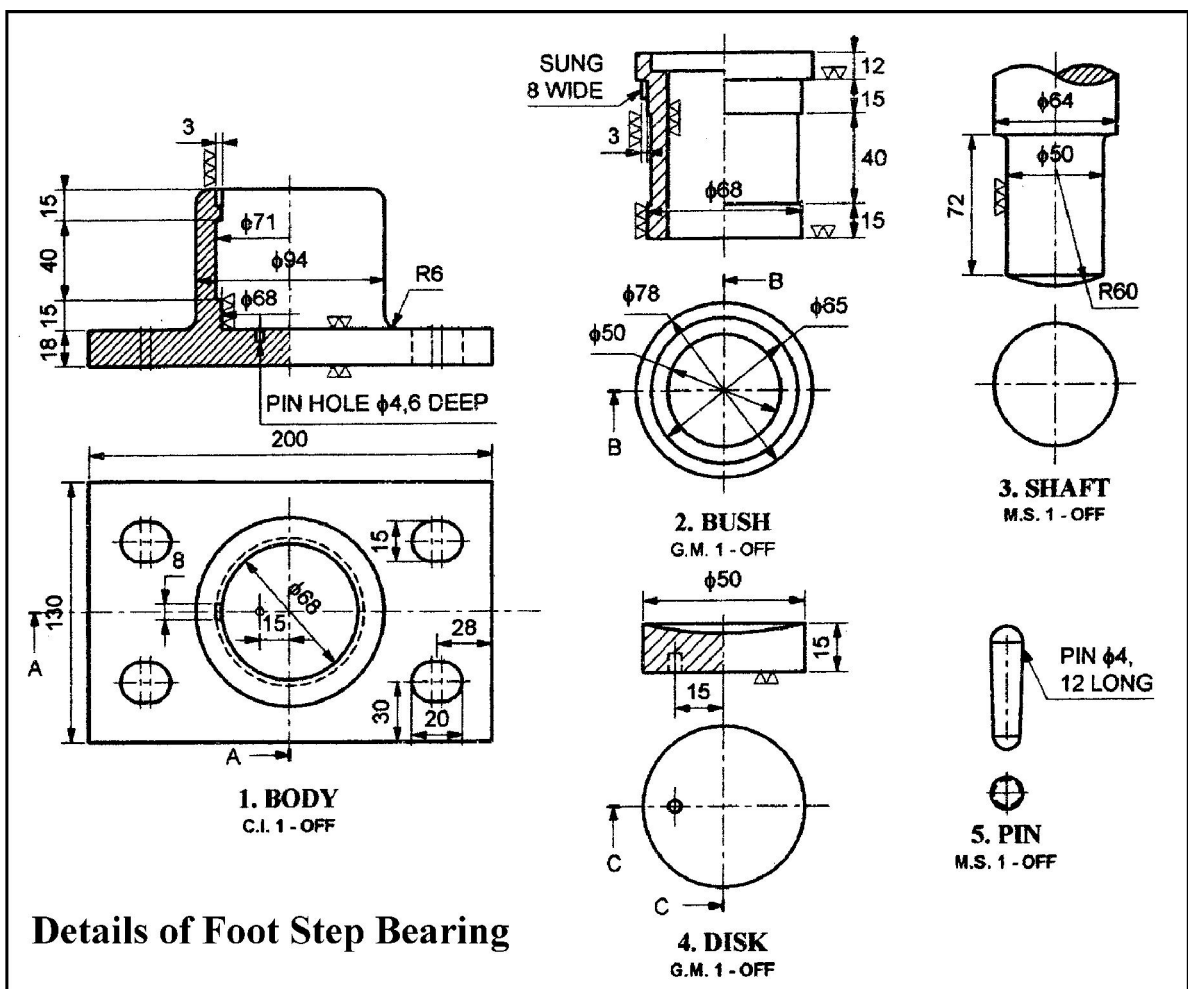


Fig. No. 5

- (b) Fig. No. 6 shows details of drilling jig.
 (i) Sectional front view of an assembly.
 (ii) Top view of an assembly.

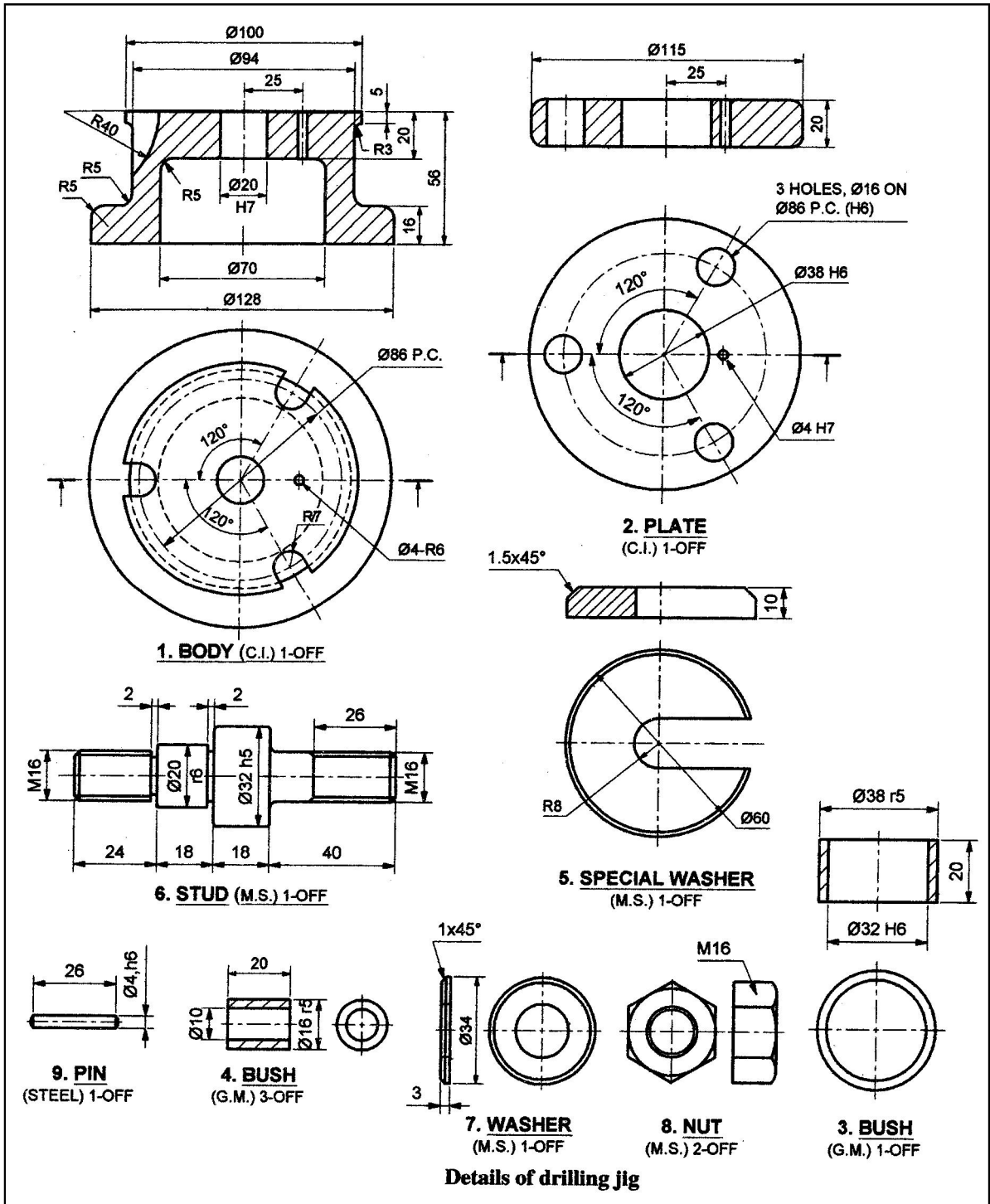


Fig. No. 6

