22341

12425

4 Hours / 70 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.

(5) Use of Non-programmable Electronic Pocket Calculator is permissible.

(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

(7) Retain all construction lines and nomenclature.

Marks

1. Attempt any FIVE of the following : **10**

(a) Draw the conventional representation of the following :

(i) Diamond knurling

(ii) Semi-elliptical leaf spring

(b) Draw actual view and conventional representation for

(i) Ball bearing

(ii) Spiral spring

(c) Draw the sketch of

(i) counter bore

(ii) counter sunk.

(d) Draw a sketch showing basic size, lower deviation and tolerance.

(e) Draw the symbol for representing the geometrical tolerance in case of following :

(i) concentricity

(ii) Angularity

(f) State the meaning of symbol shown in the Fig. No. 1.

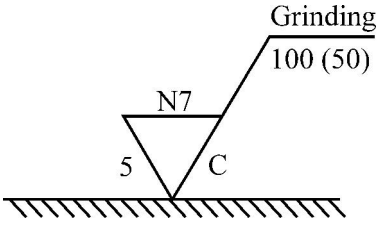


Fig. No. 1

(g) Refer Fig. 2 and state the meaning of symbol at X.

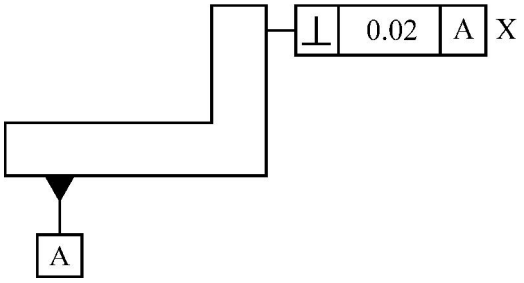


Fig. No. 2

2. Attempt any TWO of the following : **12**

(a) A cylinder 50 mm diameter & 70 mm height is completely penetrated by another cylinder of 40 mm diameter & 70 mm length horizontaly, the axis of which is parallel to both H.P. & V.P. and intersecting axis of vertical cylinder. Draw projection showing curves of intersection.

(b) A vertical square prism base 50 mm size has it's face equally inclined to V.P. It is completely penetrated by another square prism of base 30 mm side, the axis of which is parallel to both H.P. & V.P. and 6 mm away from the axis of vertical prism. The faces of horizontal prism are also equally inclined to V.P. Draw the projection of solid showing the lines of intersection.

(c) A cone with base diameter 80 mm & axis height 75 mm is kept on H.P. on it's base. It is penetrated by a horizontal cylinder of diameter 40 mm with it's axis parallel to V.P. & intersecting the axis of the cone at distance of 25 mm above the base of the cone. Draw the projection of solid showing curves of intersection.

3. (A) Attempt any ONE of the following : **4**

(a) The shaft size given as $\phi\ 16\ ^{+0.023}_{-0.012}$ and Hole size is $\phi\ 16\ ^{+0.018}_{-0.00}$. Determine types of fit between them.

(b) Define the following term :

(i) Allowance

(ii) Clearance

(iii) Interference

(iv) Deviation

(B) Attempt any TWO of the following : **12**

(a) Draw the development of lateral surface of the cylinder as shown in Fig. No. 3.

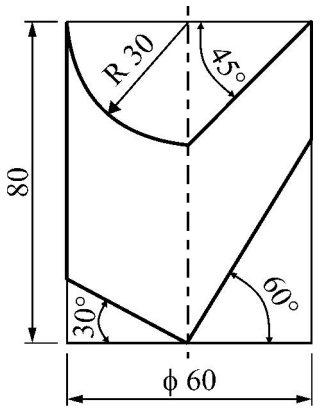


Fig. No. 3

(b) Fig. No. 4 shows F.V. of square pyramid. Draw the development of lateral surface of pyramid, also add T.V.

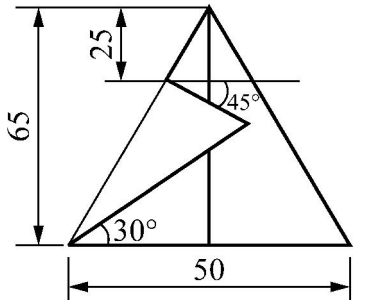


Fig. No. 4

(c) A right circular cone, diameter of base 60 mm & axis 60 mm is resting on base on H.P. It is cut by section plane perpendicular to V.P. & inclined at 45° to H.P. & bisecting the axis of cone. Draw F.V., T.V. & DLS of the cone.

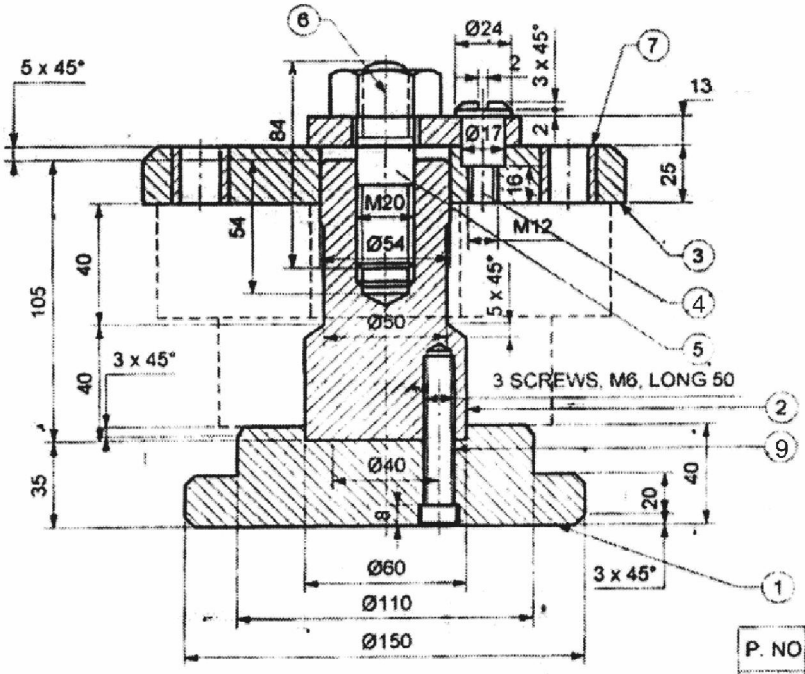
4. Attempt the following : **16**

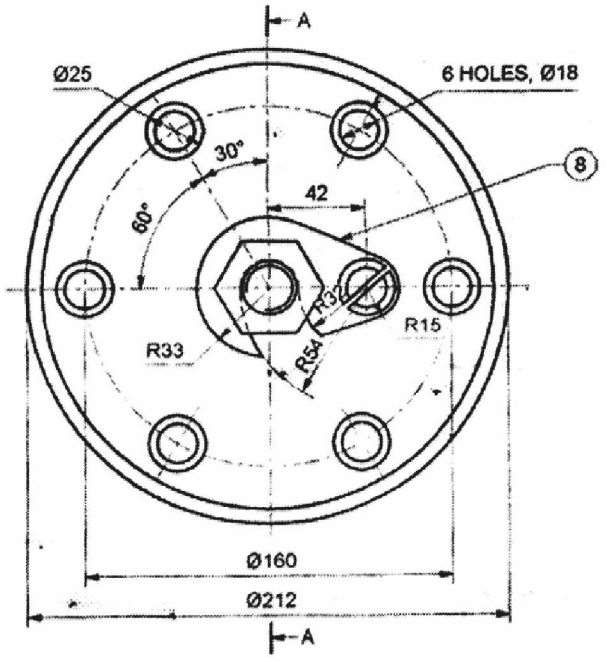
Fig. No. 5 shows assembly of a Drill Jig. Attempt any **TWO** of the following :

(a) Draw sectional front view and top view of Base plate and stem.

(b) Draw sectional front view and top view of Jig Plate and Washer.

(c) Draw Front view and side view of Stud, Nut, Bush and screw (Part No. – 9).





PART LIST

P. NO	PART NAME	MAT	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 (JIG)	STEEL	6
8	WASHER	M.S.	1
9	SCREW	M.S.	1

TOLERANCE CHART

60H7 = $^{+0.030}_{+0.000}$	60f7 = $^{-0.030}_{-0.049}$
54H7 = $^{+0.030}_{+0.000}$	54F7 = $^{-0.030}_{-0.049}$
25H7 = $^{+0.021}_{+0.000}$	25n6 = $^{+0.028}_{+0.015}$

Fig. No. 5

5. Attempt any ONE : **16**

(a) Figure No. 6 shows the details of foot step bearing. Draw

(i) Sectional F.V. of the assembly

(ii) Top view of the assembly

(iii) Bill of material

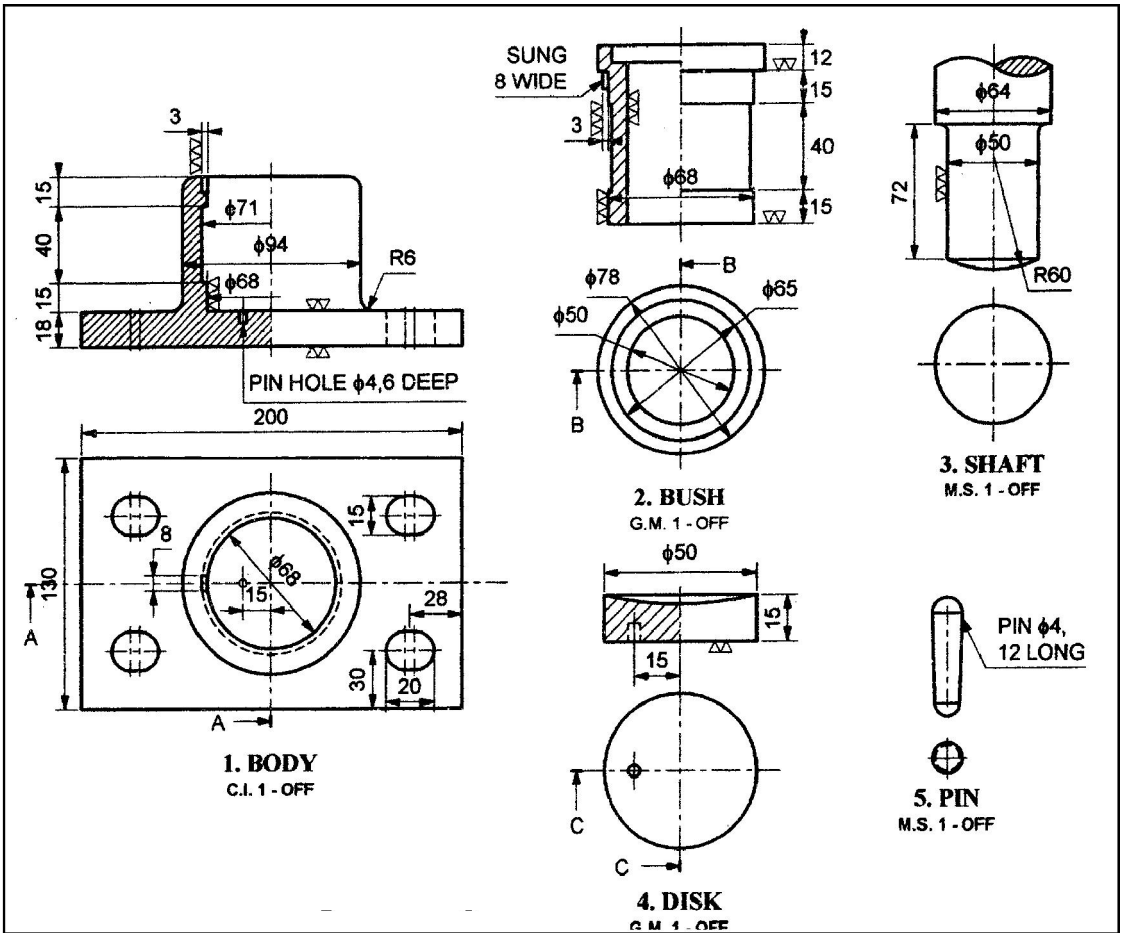


Fig. No. 6

(b) Fig. No. 7 shows details of lathe tool post. Draw the following views of assembly :

(i) Sectional FV

(ii) Top view

(iii) Prepare bill of material and indicate type of fit.

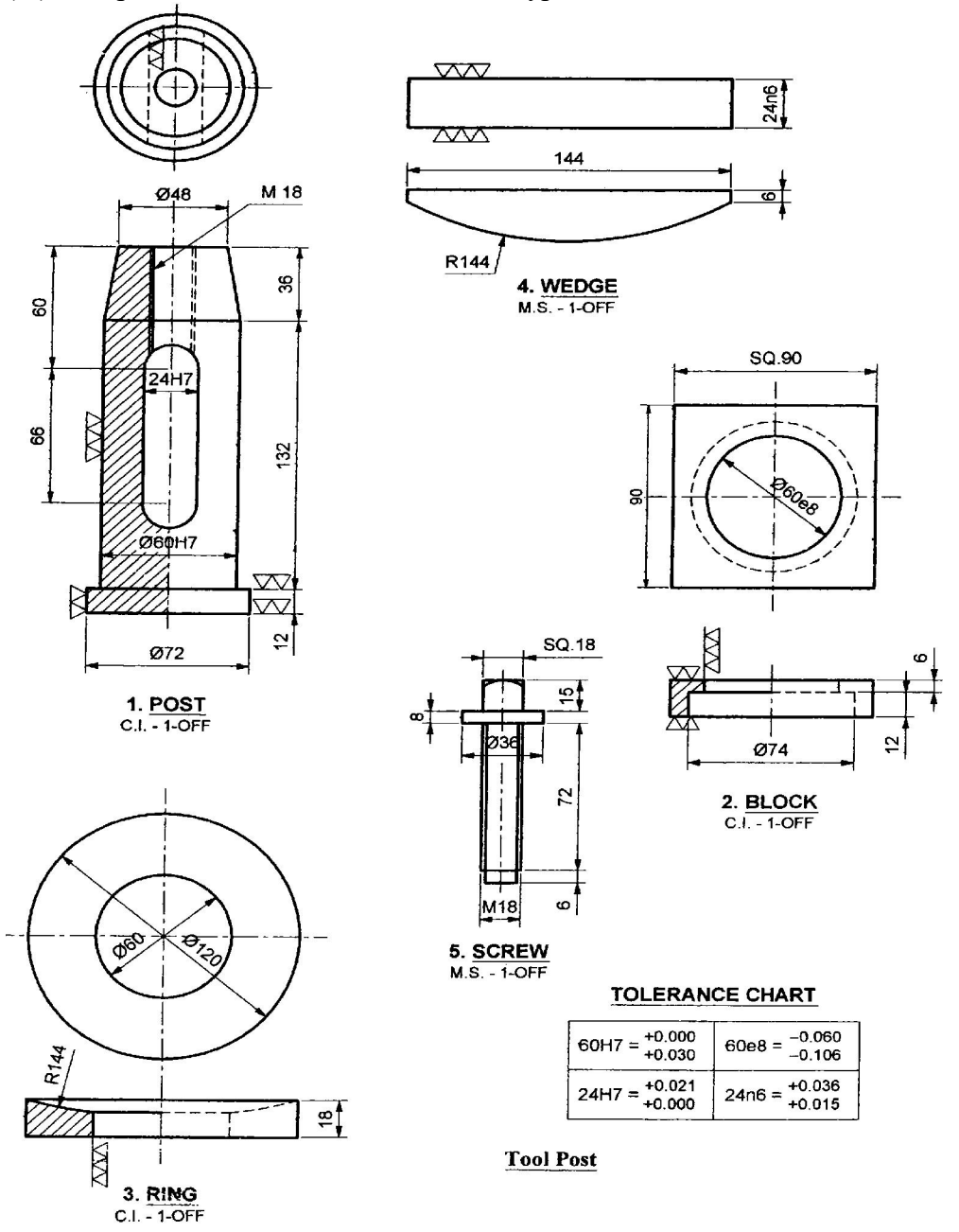


Fig. No. 7