

Scheme – I
Sample Question Paper

Programme Name : Diploma in Mechanical Engineering
Programme Code : ME
Semester : Third
Course Title : Mechanical Working Drawing
Marks : 70

22341

Time: 4 Hrs.

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.
- (6) Use only H / 2H grade pencils.
- (7) Line work and cleanliness will be given due weightage.
- (8) Retain all construction lines and nomenclature.

Q.1) Attempt any FIVE of the following.

10 Marks

- a) Draw the conventional representation of the following
 - (i) Short Break in Pipe
 - (ii) Repeated parts
- b) Draw a sketch to represent taper 1:10 on a shaft of diameter 30mm and length 100 mm.
- c) Draw a sketch of counter sunk hole and counter bore hole.
- d) Draw the actual view and conventional representation of the following:
 - (i) External thread
 - (ii) Roller Bearing.
- e) Draw the symbol for representing the geometrical tolerance in case of the following:
 - (i) Flatness
 - (ii) Cylindricity.
- f) State the meaning of the symbol shown in Fig 1.

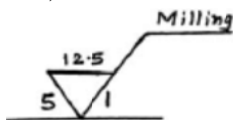


Fig-1

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

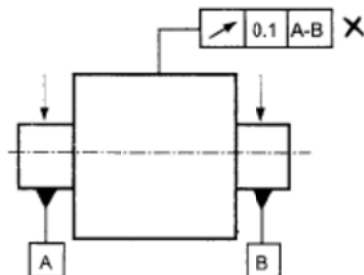


Fig-2

Q.2) Attempt any TWO of the following.

12 Marks

- A cone with a base diameter 80 mm and axis height 75 mm is resting on H.P. It is penetrated by cylinder of diameter 40mm with its axis parallel to V.P. and intersecting axis of cone at a distance 25mm above the base of the cone. Draw the projections of the solids showing the curves of intersection.
- A vertical square prism base 50 mm side and height 90 mm is completely penetrated by a horizontal square prism, 35 mm side and axis 90 mm long so that their axes are 6 mm apart. The axis of the horizontal prism is parallel to V.P. while the faces of both prisms are equally inclined to the V.P. Draw the projections of the prisms showing lines of intersections.
- A vertical square prism of 50 mm side of base and 100 mm long having its faces equally inclined to V.P. is completely penetrated by a horizontal cylinder 40 mm diameter and 100 mm length of axis, which is parallel to V.P. and 6 mm away from the axis of prism. Draw the projections of solids showing lines of intersections.

Q.3 A) Attempt any ONE of the following.

4 Marks

- Select the type of fit for the application given below and write the symbol for it.
 - Movable gear on the shaft
 - Inner ring of Ball bearing on the shaft for average loading condition..
 [For example Fit between hand wheel and shaft is easy push fit (Special group of transition fit) and the symbol of fit is H7/j6]
- The shaft size is given as $40.00^{-0.02/-0.04}$ and the hole size is $40.00^{+0.02/-0.04}$. Determine the type of fit.

Q.3 B) Attempt any TWO of the following.

12 Marks

- Draw the projections of a cone resting on the ground on its base and show on them the shortest path by which a point P starting from the point on the circumference of the base and moving around the cone will return to the same point. Base of the cone 60 mm diameter and axis 75 mm long.
- Draw the development of Part P of the Hexagonal Prism shown in the Fig -3.
- Draw the development of a cone shown in Fig-4.

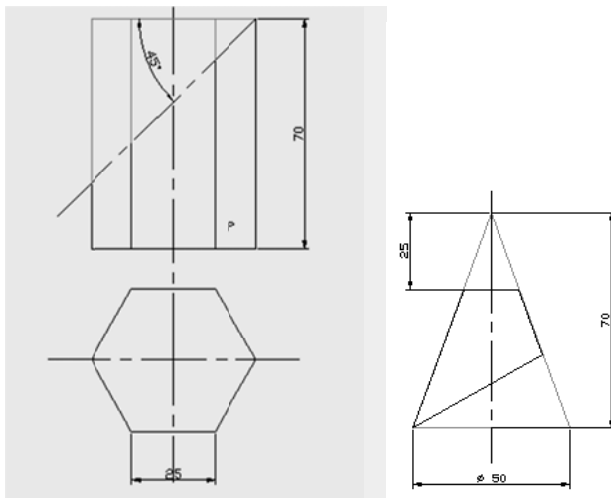


Fig-3

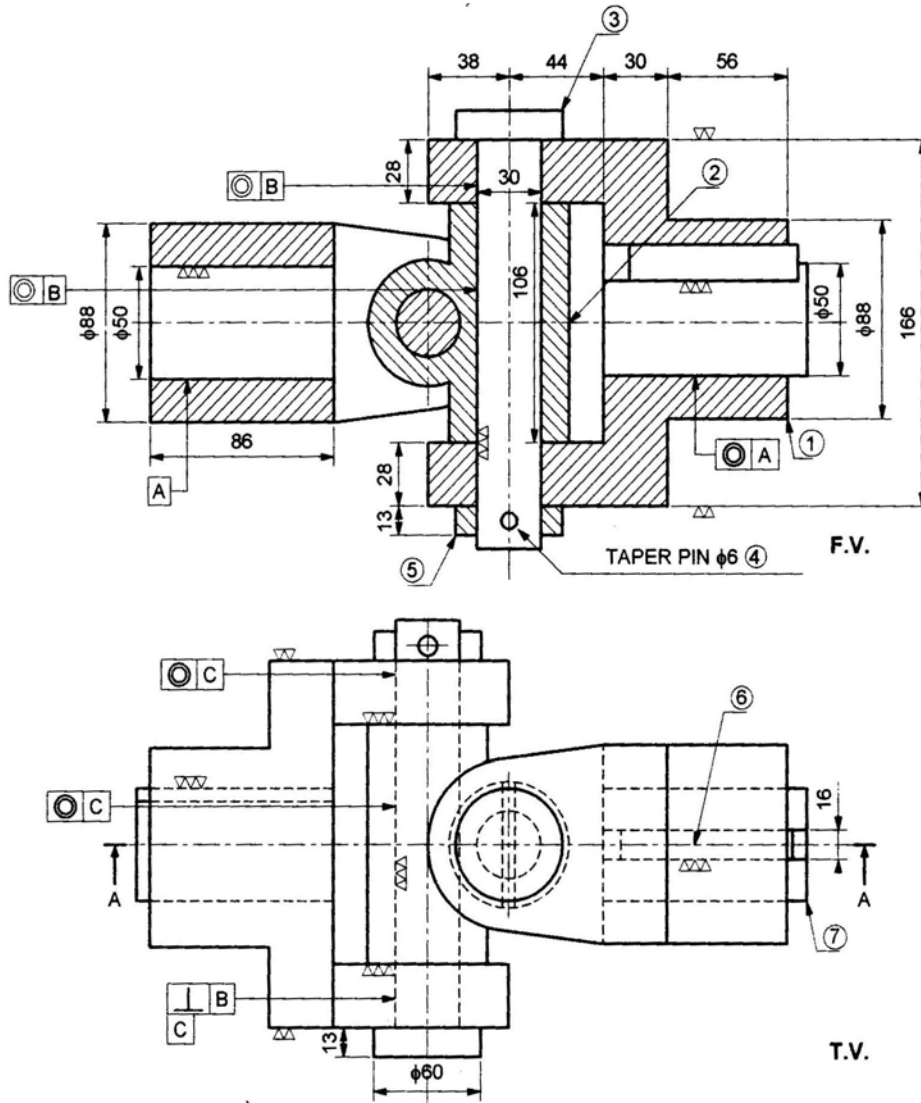
Fig-4

Q.4) Attempt the following.

16 Marks

Fig-5 shows the assembly of universal coupling. Attempt **any TWO** of the following.

- a) Draw sectional Front View and Top View of Fork.
- b) Draw sectional Front View and Top View of Center Block.
- c) Draw two views each of Shaft ,collar and Key.



PART LIST

PART NO.	PART NAME	METAL	QTY.
1.	FORK	C.I.	2
2.	CENTER BLOCK	C.I.	1
3.	PIN	M.S.	2
4.	TAPER PIN	M.S.	2
5.	COLLAR	M.S.	2
6.	KEY	M.S.	2
7.	SHAFT	M.S.	2

Fig- 5

Q.5) Attempt any ONE of the following.

16 Marks

- a) Fig-6 shows the details of Non-return Valve. Draw -

- (i) Sectional Front View of assembly. (8)
- (ii) Half Top View. (4)
- (iii) Prepare Bill of material and prepare fit chart from the given tolerance chart. (4)

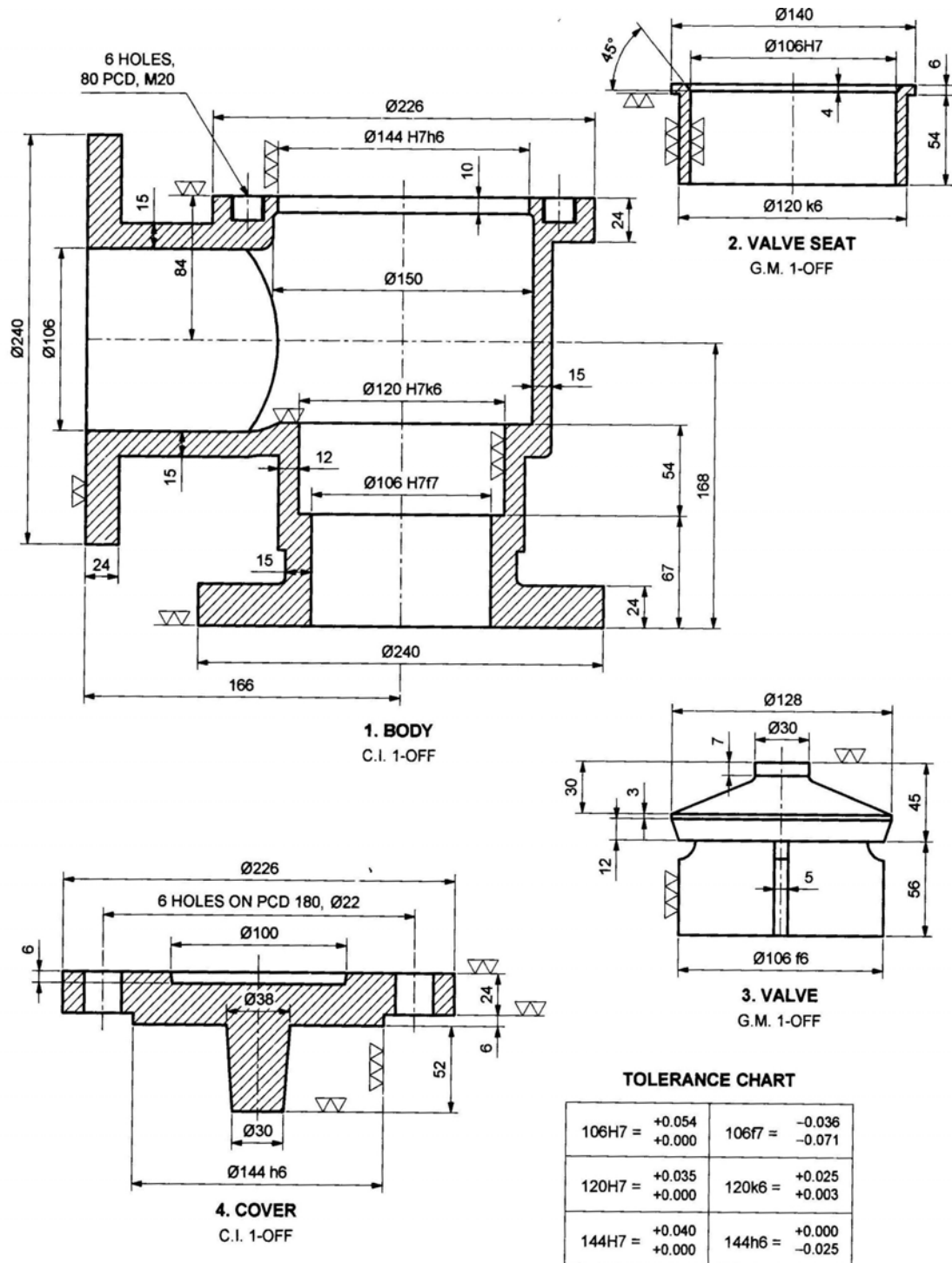


Fig-6

b) Fig-7 shows the details of Foot Step Bearing. Draw -

- (i) Half Sectional Front View of assembly. (8)
- (ii) Top View. (4)
- (iii) Prepare Bill of material and give any eight dimensions. (4)

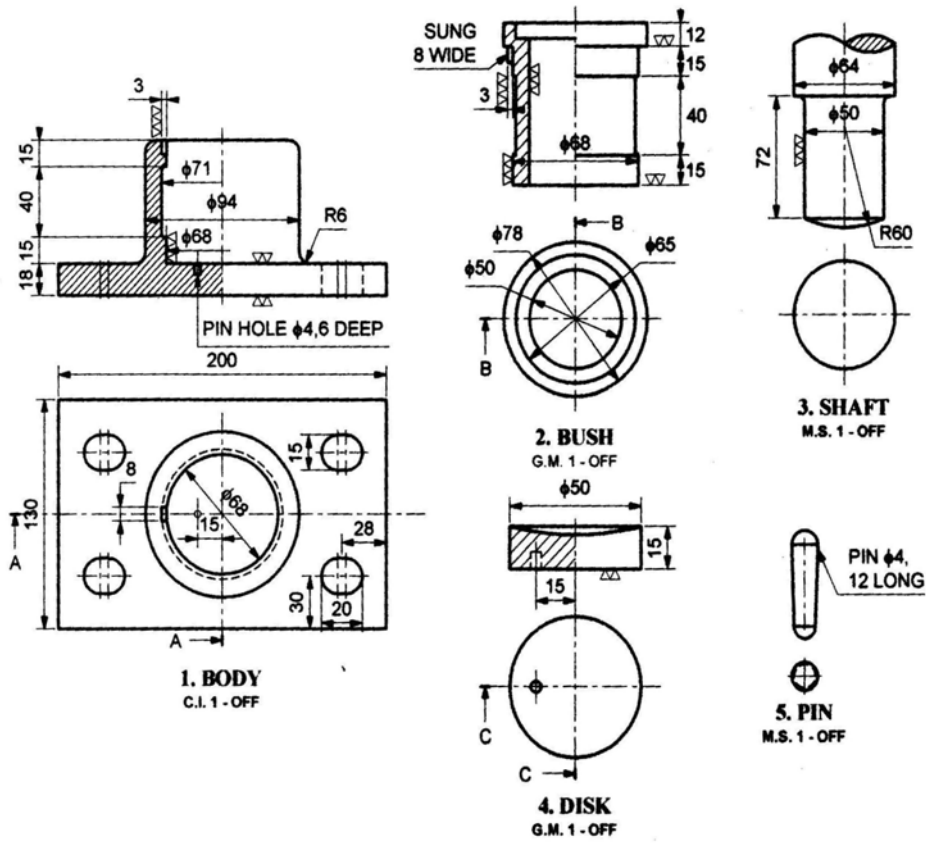


Fig-7

Scheme – I

Sample Test Paper - I

Programme Name : Diploma in Mechanical Engineering

Programme Code : ME

Semester : Third

Course Title : Mechanical Working Drawing

Marks : 20

22341

Time: 1 hour 15 Min

Instructions:

- (1) All questions are compulsory
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Q.1 Attempt the following.

04 Marks

- a) Draw the actual view and conventional representation of any **TWO** of the following:
- (i) Slotted Head (ii) Splined shaft (iii) Square on shaft.

Q.2 Attempt any Two.

16 Marks

- a) The projections of a square Prism with a hole drilled in it are given in the Fig- 1. Draw the development of lateral surface of the Prism.

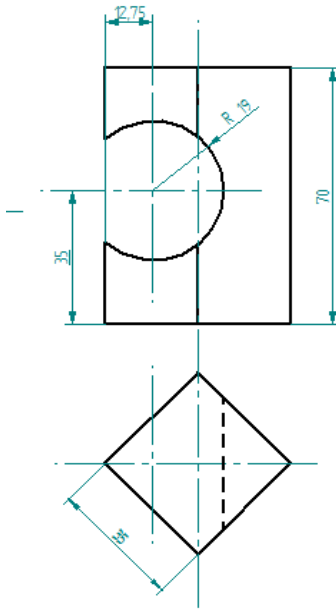


Fig-1

b) A vertical cylinder of 80 mm diameter is penetrated by another cylinder of 60 mm diameter, the axis of which is parallel to both the H.P and the V.P. The two axes are 8 mm apart. Draw the projections showing the lines of intersection.

c) A vertical square prism , base 50 mm side and height 90 mm has a face inclined at 30° to the V.P. It is completely penetrated by another square prism base 38 mm side and axis 100 mm long, face of which are equally inclined to V.P. the axis of the two prism are parallel to V.P. and bisect each other at right angles. Draw the projections showing the lines of intersection.

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Q.1 Attempt any TWO.

04 Marks

- a) Fig-1 shows the representation of basic size and its deviations , identify the same .

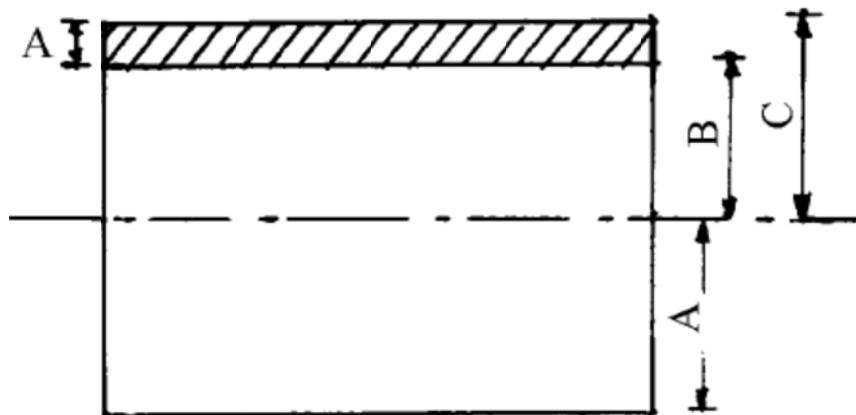


Fig-1

b) Two rectangular plates are to be welded with each other along the length. The thickness and length of both the plates is 15 mm and 80 mm respectively. The plates are to be welded with convex double V butt weld. Prepare the welding drawing.

c) Find the maximum and minimum sizes of shaft and hole $\phi 30$ H7/d9. Refer Table-I.

(Values in microns)

Nominal sizes	Tolerances of holes					Tolerances of shafts				
	H7	H8	H9	H10	H11	d9	e8	f7	g6	h6
From 1 Upto 3	+10 0	+14 0	+ 25 0	+ 40 0	+ 60 0	- 20 - 45	- 14 - 28	- 6 - 16	- 2 - 8	0 - 6
Over 3 Upto 6	+12 0	+18 0	+ 30 0	+ 45 0	+ 75 0	- 30 - 60	- 20 - 38	- 10 - 22	- 4 -12	0 - 8
Over 6 Upto 10	+15 0	+22 0	+ 36 0	+ 58 0	+ 90 0	- 40 - 75	- 25 - 47	- 13 - 28	- 5 -14	0 - 9
Over 10 Upto 18	+18 0	+27 0	+ 43 0	+ 70 0	+110 0	- 50 - 93	- 32 - 59	- 16 - 34	- 6 -17	0 -11
Over 18 Upto 30	+21 0	+33 0	+ 52 0	+ 84 0	+130 0	- 65 -117	- 40 - 73	- 20 - 41	- 7 -20	0 -13
Over 30 Upto 50	+25 0	+39 0	+ 62 0	+100 0	+160 0	-80 -142	- 50 - 89	- 25 - 50	- 9 -25	0 -16
Over 50 Upto 80	+30 0	+46 0	+ 76 0	+120 0	+190 0	-100 -174	- 60 -105	- 30 - 60	-10 -29	0 -19
Over 80 Upto 120	+35 0	+54 0	+ 87 0	+140 0	+220 0	-120 -207	- 72 -126	- 36 - 71	-12 -34	0 -22
Over 120 Upto 180	+40 0	+63 0	+100 0	+160 0	+250 0	-145 -245	-85 -148	- 43 - 83	-14 -39	0 -25
Over 180 Upto 250	+45 0	+72 0	+115 0	+185 0	+290 0	-170 -285	-100 -172	- 50 - 96	-15 -44	0 -29
Over 250 Upto 315	+52 0	+81 0	+130 0	+210 0	+320 0	-190 -320	-110 -191	- 56 -108	-17 -49	0 -32
Over 315 Upto 400	+57 0	+89 0	+140 0	+230 0	+360 0	-210 -350	-125 -214	- 62 -119	-18 -54	0 -35
Over 400 Upto 500	+63 0	+97 0	+155 0	+250 0	+400 0	-230 -385	-135 -232	- 68 -131	-20 -60	0 -40

Note: Upto means including. Over means excluding.

Table-I

Q.2 Attempt any ONE.

16 Marks

a) Fig-2 shows the details of Old Ham's coupling. Draw -

(i) Sectional Front View of assembly. (8)

(ii) Side View. (4)

(iii) Prepare Bill of material and give any eight dimensions. (4)

Oldham's coupling :

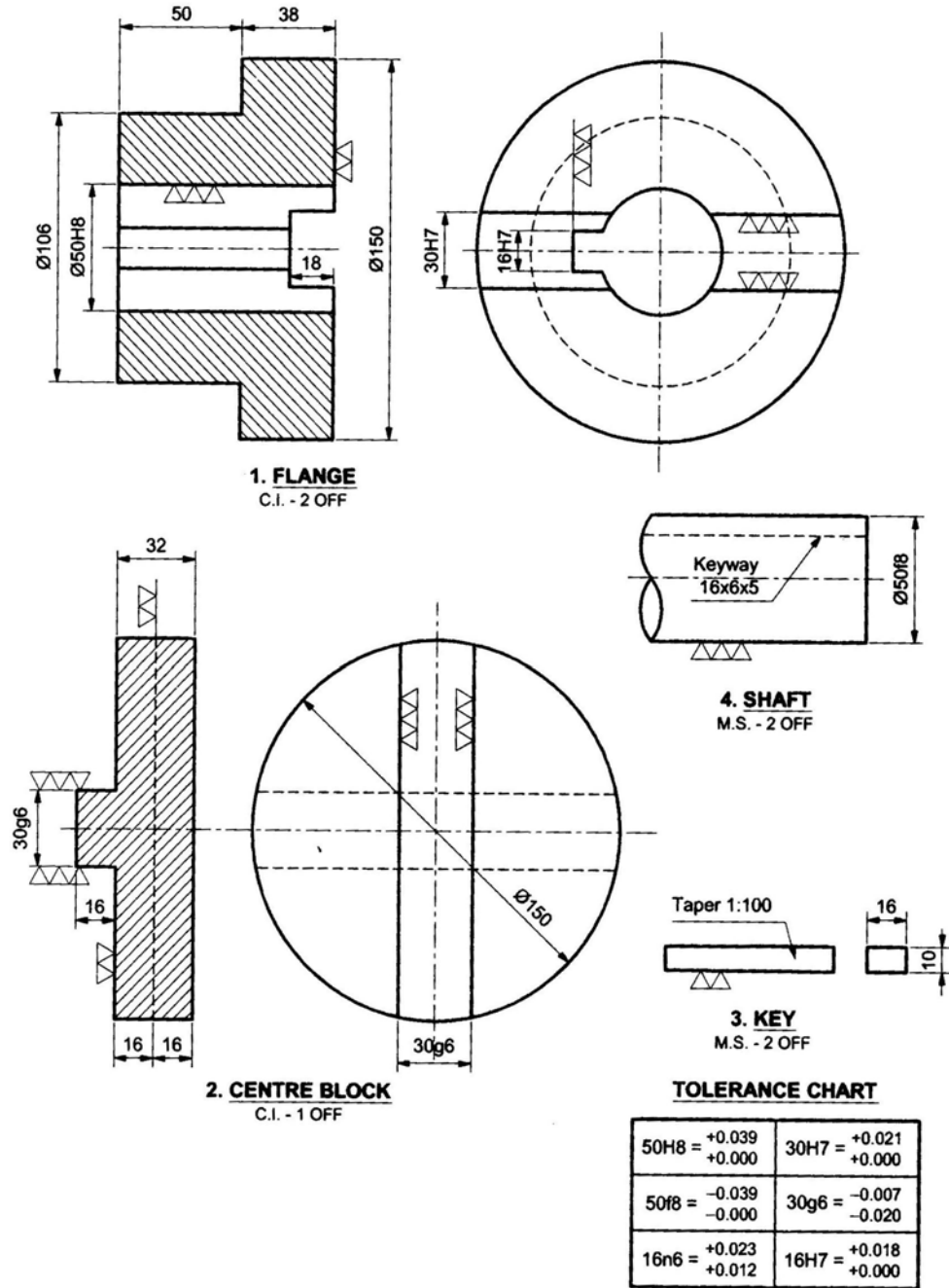


Fig-2

b) Fig-3 shows the assembly of Lathe Tool Post. Attempt **any TWO** of the following.

- Draw sectional Front View and Top View of Post.
- Draw sectional Front View and Top View of Block and Ring.

iii) Draw two views each of Wedge and Screw.

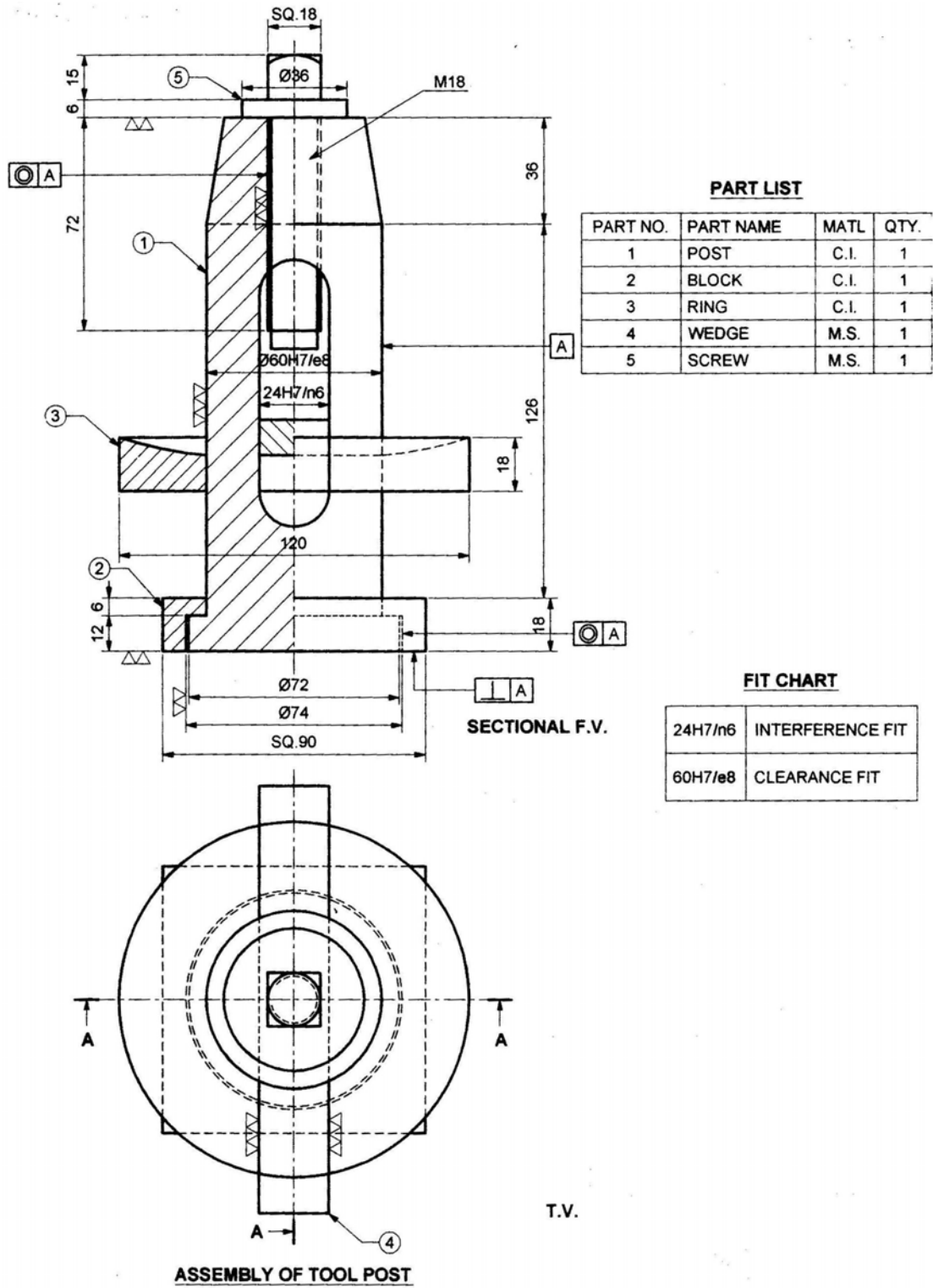


Fig-3