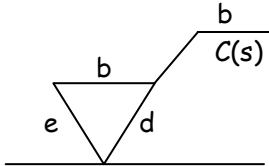


- Instructions :** (1) All questions are compulsory.  
(2) Illustrate your answers with neat sketches wherever necessary.  
(3) Figures to the right indicate full marks.  
(4) Assume suitable data if necessary.  
(5) Preferably, write the answers in sequential order.

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

- (a) Draw the conventional representation of the following:  
(i) External Screw Thread      (ii) Diamond Knurling  
(b) Draw sketch to represent taper 1:10 on a shaft of diameter 30mm and length 100mm.  
(c) Draw a sketch of (i) Counter bore hole (ii) Counter sunk hole  
(d) Draw the symbol for representing the geometrical tolerance in case of following:  
(i) Angularity      (ii) Concentricity  
(e) State the meaning of the symbol shown in figure.



- (f) State the meaning of following symbol  
(i) X      (ii) =

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

- (a) 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.  
(b) 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.

(c) 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.

3. (a) Attempt any **ONE** of the following. [4]

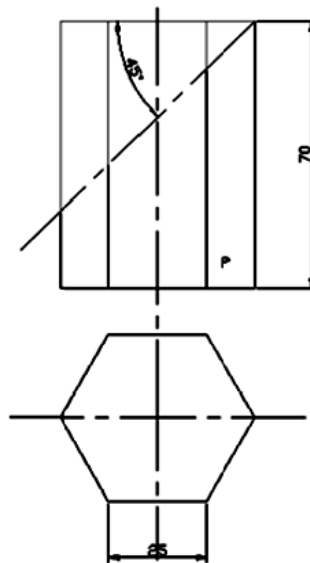
(i) Draw a neat sketch showing zero line, shaft, hole upper deviation, lower deviation, Basic size, tolerances.

(ii) The shaft size is given as  $\phi 15^{+0.034/0.023}$  the hole size is given  $\phi 15^{+0.018}$ . Determine the type of fit.

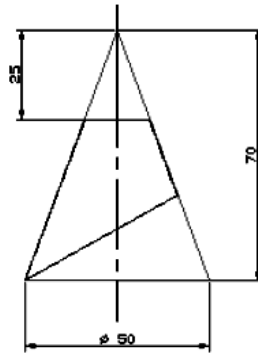
3. (b) Attempt any **TWO** of the following. [12]

(i) 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.

(ii) Draw the development of Part P of the Hexagonal Prism shown in the figure.



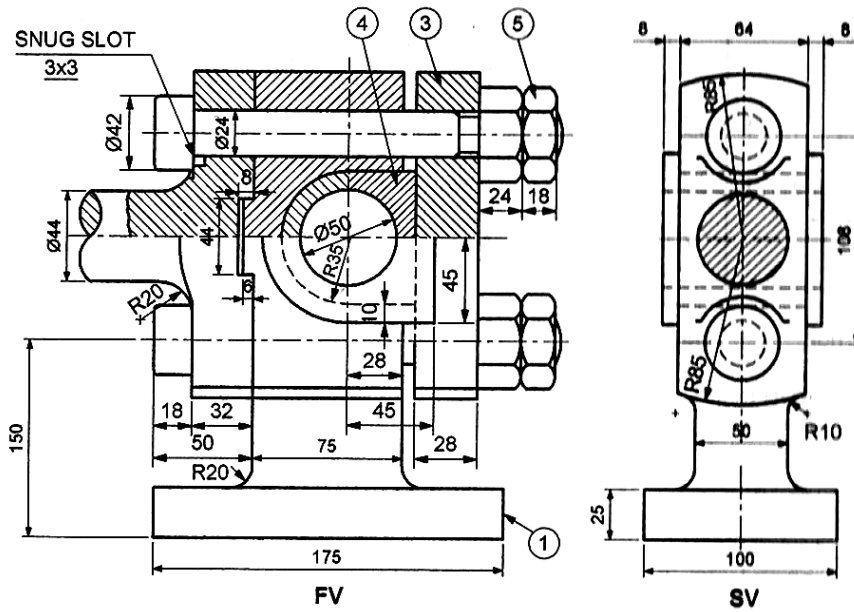
(iii) Draw the development of a cone shown in Figure.



4. Assembly of crosshead is given. Draw the following.

[16]

- (i) Brass                      (ii) Cross head body                      (iii) Piston rod end.



**PART LIST**

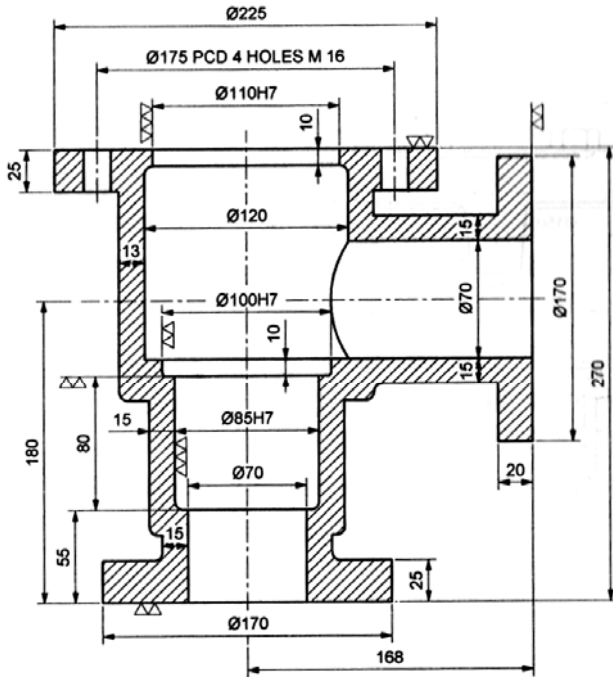
PART NO.	PART NAME	MATL.	QTY.
1	CROSS BODY	C.I.	1
2	PISTON ROD END	C.I.	1
3	CAP	C.I.	1
4	BRASS (TWO HALVES)	G.M.	1
5	ROUND HEAD NUT & BOLT	M.S.	2

Fig.: Assembly of crosshead

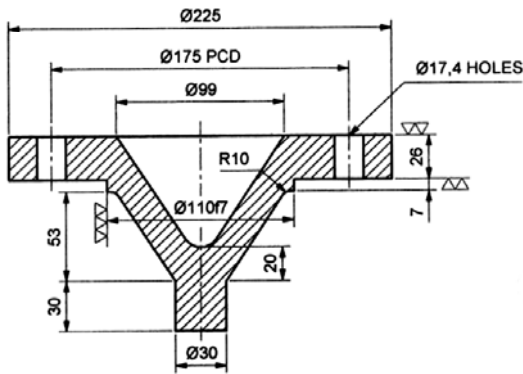
5. Figure shows details of non-return valve. Draw the

- (a) Sectional front view (b) T.V.  
 (c) Prepare the part list of assembly

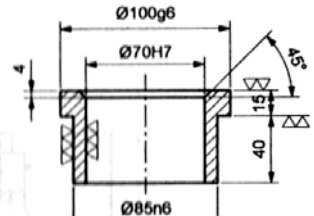
[8]  
 [4]  
 [4]



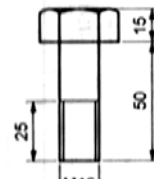
**1. BODY**  
 C.I. 1-OFF



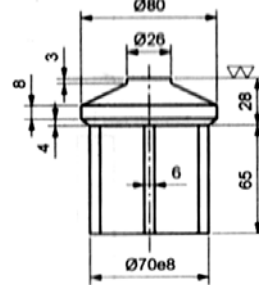
**4. COVER**  
 C.I. 1-OFF



**2. VALVE SEAT**  
 G.M. 1-OFF



**5. STUD**  
 M.S. 4-OFF

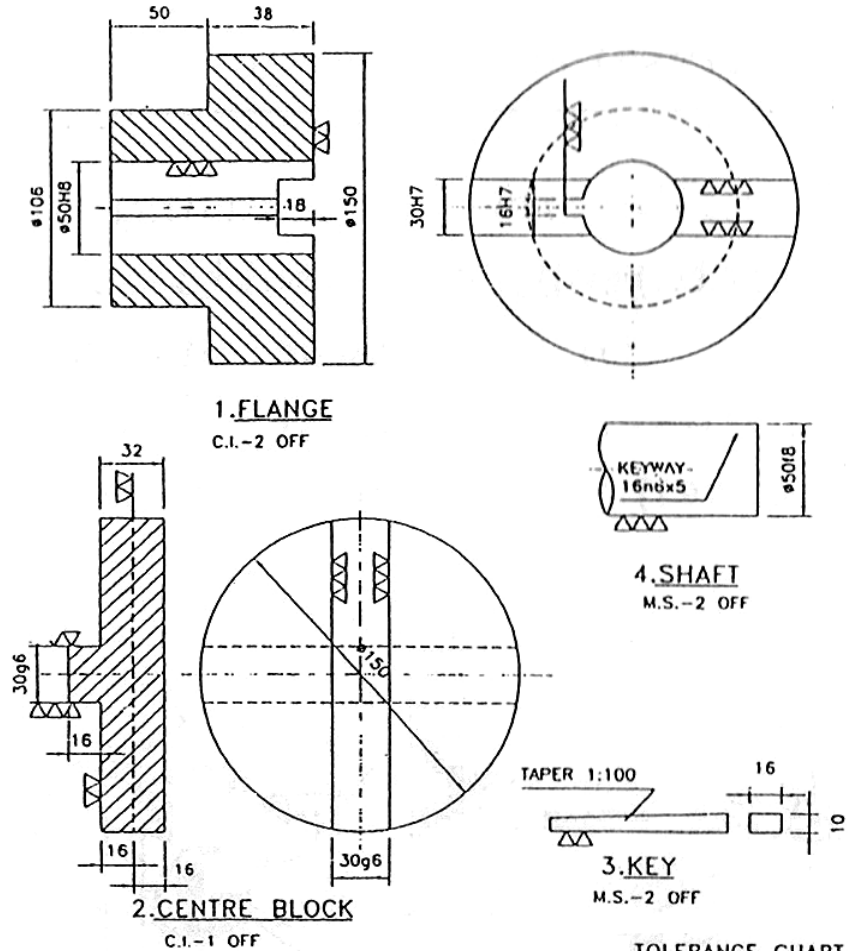


**3. VALVE**  
 G.M. 1-OFF

**TOLERANCE CHART**

110H7 = +0.035 +0.000	110f7 = -0.036 -0.071
100H7 = +0.035 +0.000	100g6 = -0.012 -0.034
85H7 = +0.030 +0.000	85n6 = +0.045 +0.023
70H7 = +0.030 +0.000	70e8 = -0.060 -0.106

6. Figure shows details of oldham's coupling Draw assembly.



□ □ □ □ □