

12042

13141

4 Hours / 100 Marks

Seat No.

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Instructions : (1) All Questions are *compulsory*.

(2) Figures to the right indicate full marks.

(3) Assume suitable data, if necessary.

(4) Use only H/2H grade pencils.

(5) Retain all construction lines and nomenclature.

Marks

1. (A) Draw conventional representation for the following (any FOUR) : **08**

- (a) Bronze
- (b) Check valve
- (c) Revolved section
- (d) Counter sunk
- (e) Serrated shaft
- (f) Bevel Gear

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

- (a) Draw the welding drawing of two shafts with equal diameter welded end to end by means of square butt weld with convex counter at site.

P.T.O.

(b) Draw the symbols for following features which are controlled in geometrical tolerancing :

- (1) Parallelism
- (2) Position
- (3) Symmetry
- (4) Circularity

(c) The shaft size is given as $40_{-0.04}^{-0.02}$ and the hole size is $40_{-0.04}^{+0.02}$. Determine the type of fit between them.

(d) Explain the meaning of every term, which is related with Fig. 1.

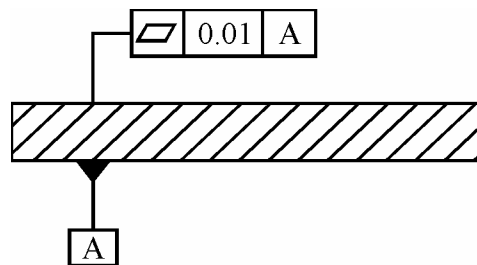


Fig. 1

2. (A) Show an angle plate 10 mm thick, 60° angle having a circular hole of 30 mm diameter on an inclined surface as shown. Using first angle projection method, draw its front view part auxiliary view and top view. (Fig. 2)

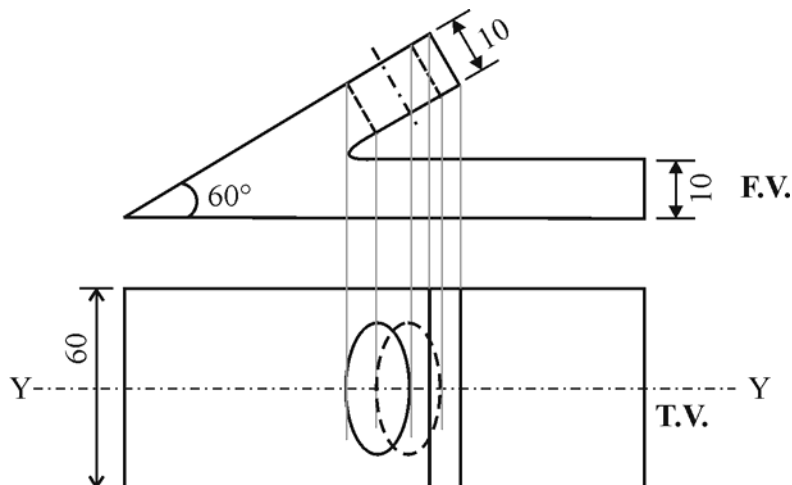


Fig. 2

- (B) A line AB 75 mm long is inclined at an angle of 35° to the HP and 55° to the V.P. Its end point 'A' is on the H.P. and 15 mm in front of the V.P. Draw the projections of the line AB assuming it to be in the first quadrant.

08

OR

A pentagonal plate ABCDE side 40 mm is kept on the H.P. on its side AB in such a way that its surface makes an angle of 40° with H.P. Draw the projections of the pentagonal plate ABCDE when side AB which is in the H.P. is inclined at 40° with V.P. with its end A 20 mm in front of V.P.

3. Attempt any TWO :

20

- (a) A right circular cylinder with base diameter 60 mm axis length 60 mm stands vertically on its base in the H.P. A square prism with side of base 25 mm, axis length 80 mm penetrates horizontally such that its axis is parallel to V.P. and 10 mm away in front from the axis of vertical cylinder and is 30 mm above the base of the cylinder. The faces of square prism are equally inclined with H.P. Draw the projections of solids with curve of intersection.
- (b) A cone, diameter of base 80 mm and height 90 mm, is resting on H.P. on its base. A hole of 50 mm diameter is drilled through the cone. The axis of the hole is 28 mm above and parallel to the base of cone. The axis of the hole is parallel to the V.P. also. Draw three views of cone showing of intersections of the hole with cone.
- (c) A connecting rod, 50 mm diameter, has a forged rectangular block at the end 50 mm wide and 20 mm thick. The joint of rod with the block is having fillet radius of 30 mm. Draw the projections of the rod with block end showing curves of intersection.

P.T.O.

4. Attempt any ONE :

- (a) Fig. 3 shows the details of Oldham's coupling. Draw sectional F.V. & R.H. S.V. of assembly. Prepare bill of material. Indicate types of fit. Assume axis 20 mm apart (offset).

Oldham's coupling :

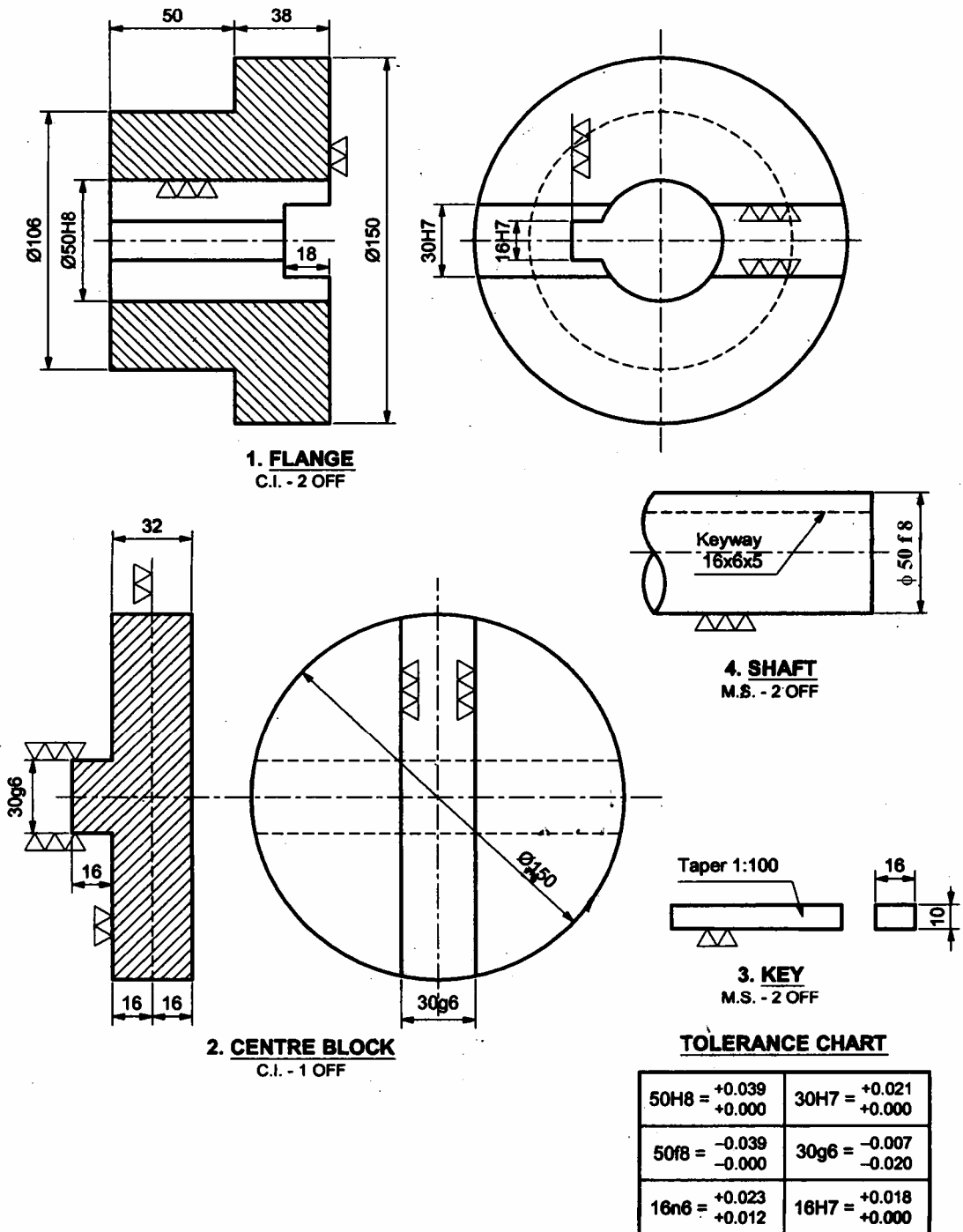
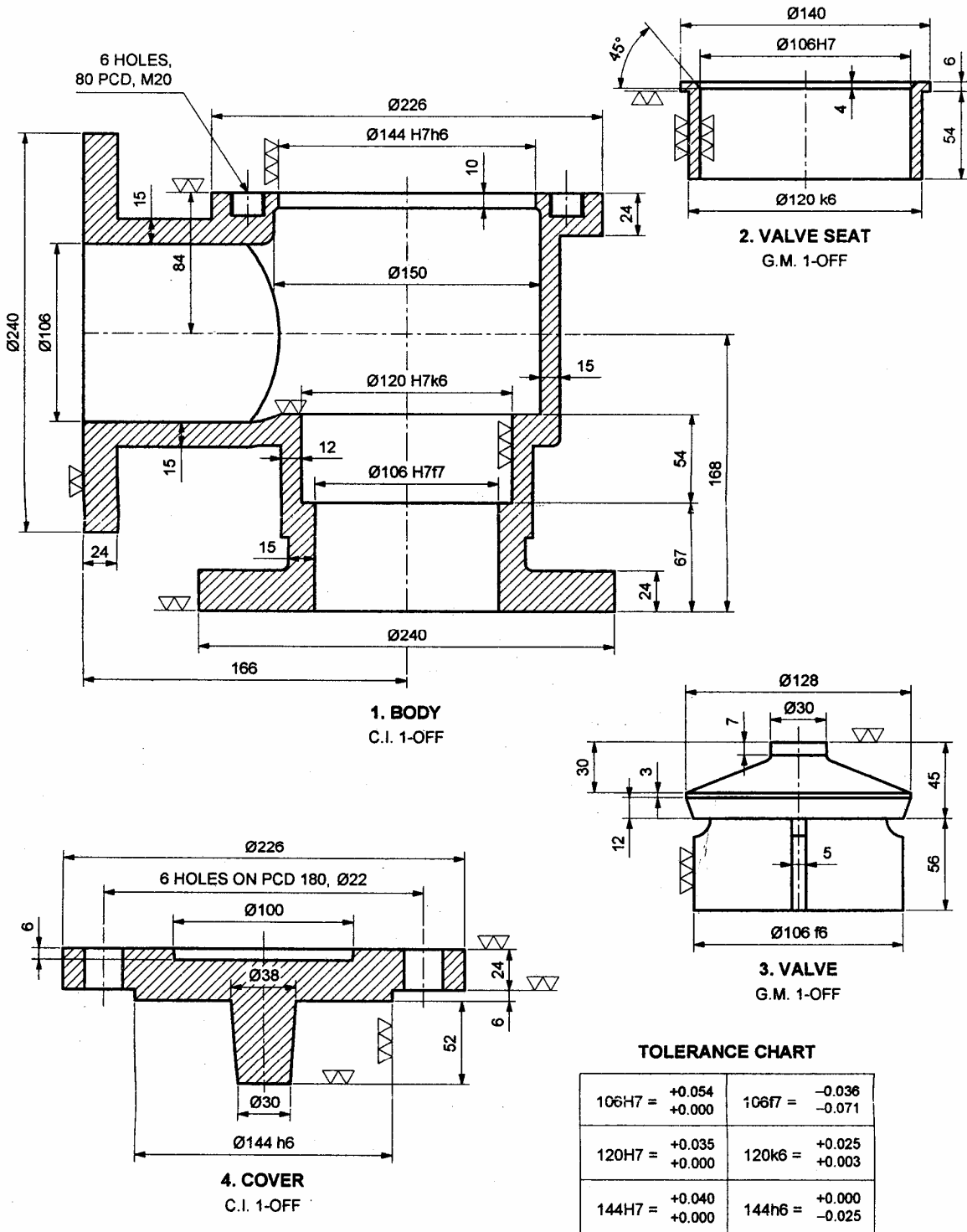


Fig. 3

(b) Fig. 4 shows the details of non-return valve. Draw sectional F.V. & T.V. of assembly. Prepare bill of material.



Details of non-return valve

Fig. 4

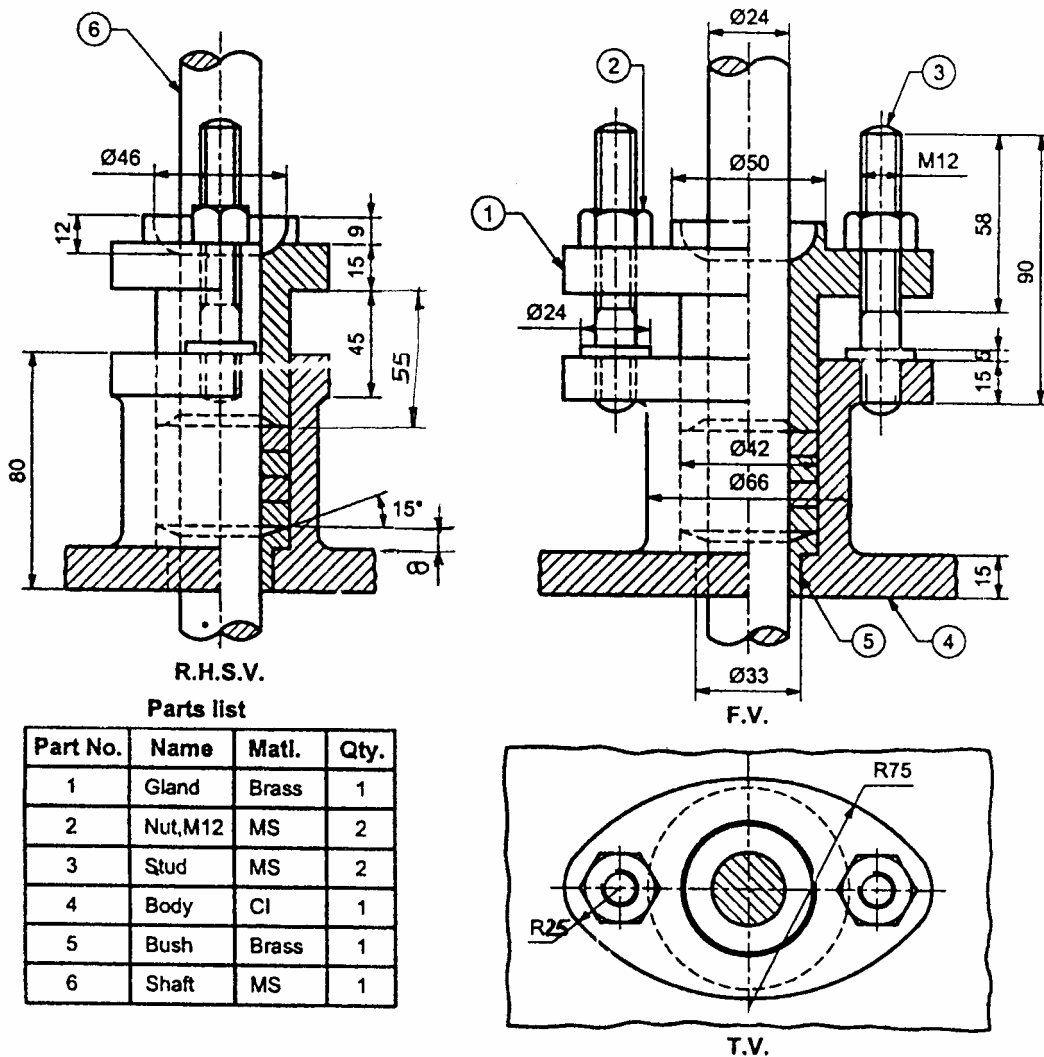
5. Attempt any ONE :

(a) Fig. 5 shows assembly of Gland and Stuffing Box. Draw following view :

(i) Body (Sec. F.V. & S.V and T.V.)

(ii) Bush/Nut and Stud

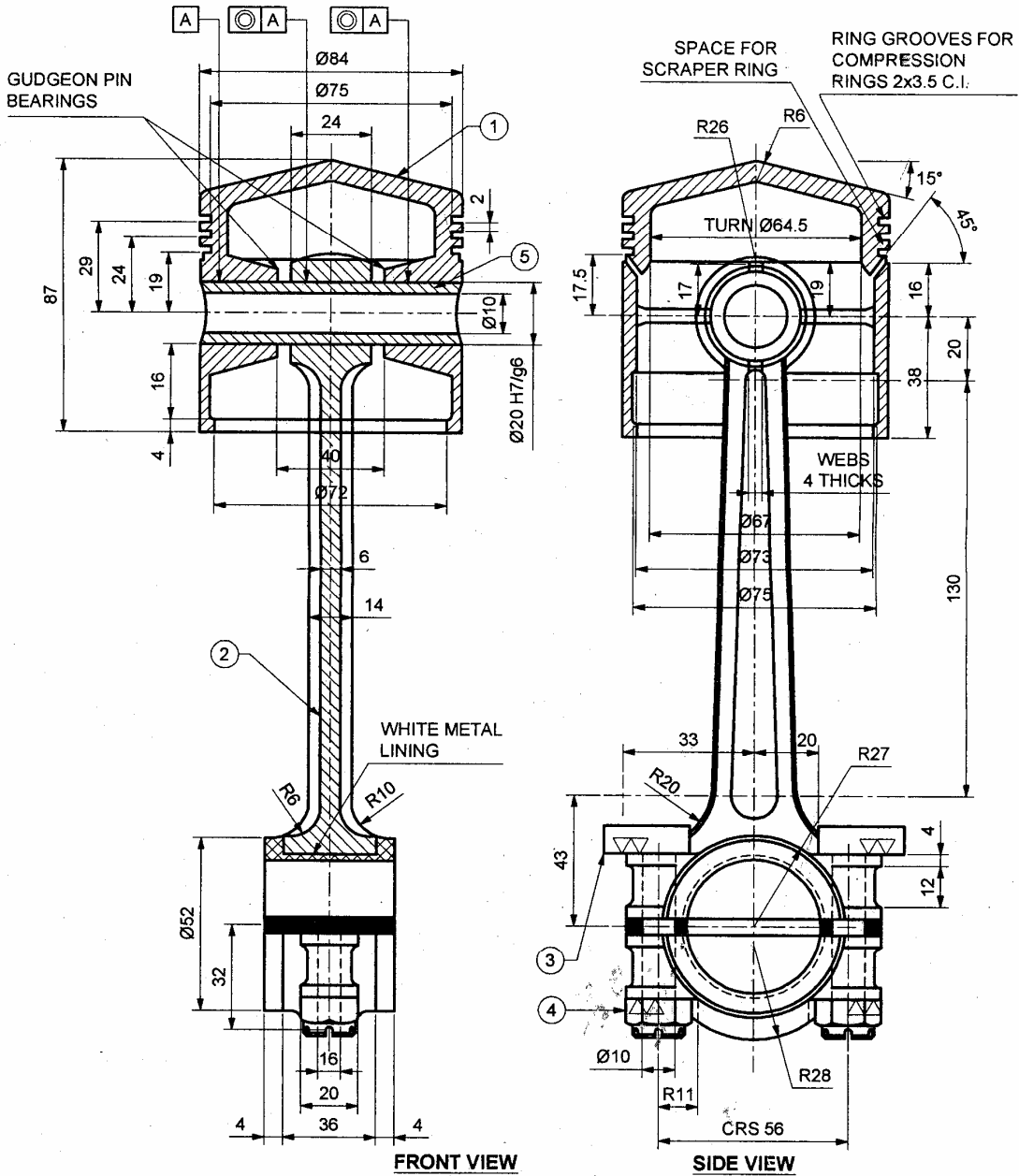
(iii) Gland (F.V. & T.V.)



: Assembly of gland and stuffing box

Fig. 5

(b) Fig. 6 shows assembly of petrol engine piston and connecting rod. Draw details of piston and connecting rod only.



PART LIST

PART NO.	PART NAME	MATL.	QTY.
1	PISTON	ALLOY ALLOY	1
2	CONNECTING ROD	ALLOY STEEL	1
3	BIG-END BOLT	M.S.	2
4	CASTLE NUT	M.S.	2
5	GUDGEON PIN	HARDENED STEEL	1

FIT CHART

20H7/g6	CLEARANCE FIT
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Assembly of petrol engine piston and connecting rod

Fig. 6

