

Engineering Drawing

KEYS & COTTER

Keys and Cotters are the machine elements and used as temporary fasteners. These are used where Nuts and bolts are not possible to use.

Keys:- are the machine elements used to avoid relative rotational motion between a shaft and a part mounted on it such as gears, couplings, pulleys, wheels

Q:- Name the material used for key.

Ans:- Keys are generally made of mild steel or wrought iron

Q:- What is keyway?

Ans:- The grooves or slots cut in the shaft and hub for fixing the key is known as keyway.

Types of keys:-

1. Saddle key:- These are Tapered key of uniform width, but tapers from one end to other end on the upper side. These are of two types.

(a) Hollow saddle key (b) Flat saddle key.

2. Sunk key:- The key which is sunk half of its thickness into the shaft and half of its thickness into hub is called sunk key.

(a) Taper sunk key (b) Parallel sunk key (c) Woodruff key

3. Round or Pin key:- Round keys are of circular cross section having taper 1:50 along its length. These keys are generally used for light duty.

The formula is $0.25 \pm P$

Cotter

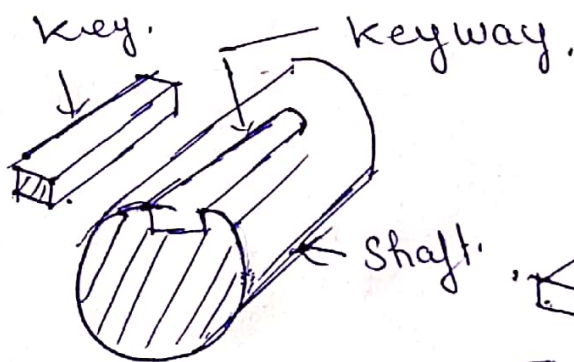
Cotter:- It is flat wedge shaped piece of mild steel usually rectangular in section. These are used to hold two parts subjected to tensile or Compressive axial forces.

Thickness of Cotter is $0.25D$ where 'D' is the diameter of shaft.

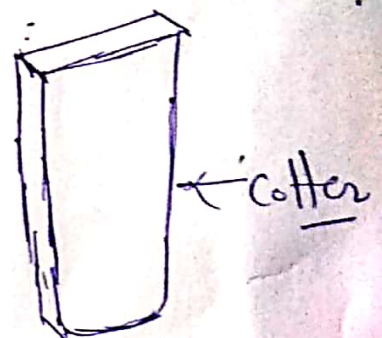
Q:- Define Cotter Joint:- (Ans) A joint which is used to connect rigidly two co-axial rods with the help of Cotter which are subjected to axial tensile or Compressive forces.

Q:- Name different types of Cotter Joints

- Ans:-
- (1) Glib and Cotter Joint.
 - (2) Socket & Spigot Joint.
 - (3) Cotter Joint with Sleeve.



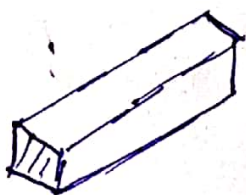
keyway and key:



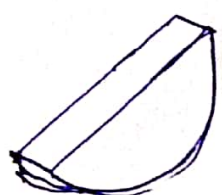
Flat saddle key.



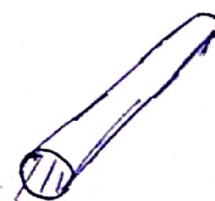
hollow saddle key.



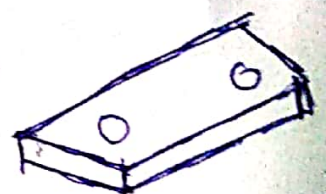
Parallel sunk key.



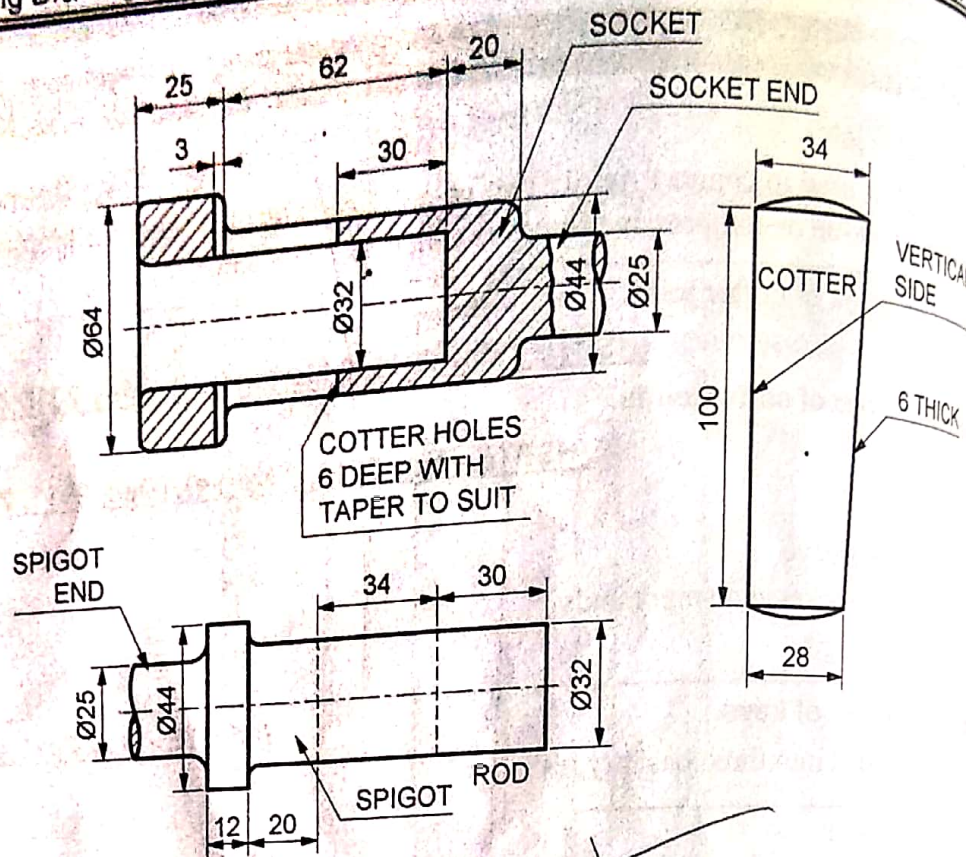
Woodruff key.



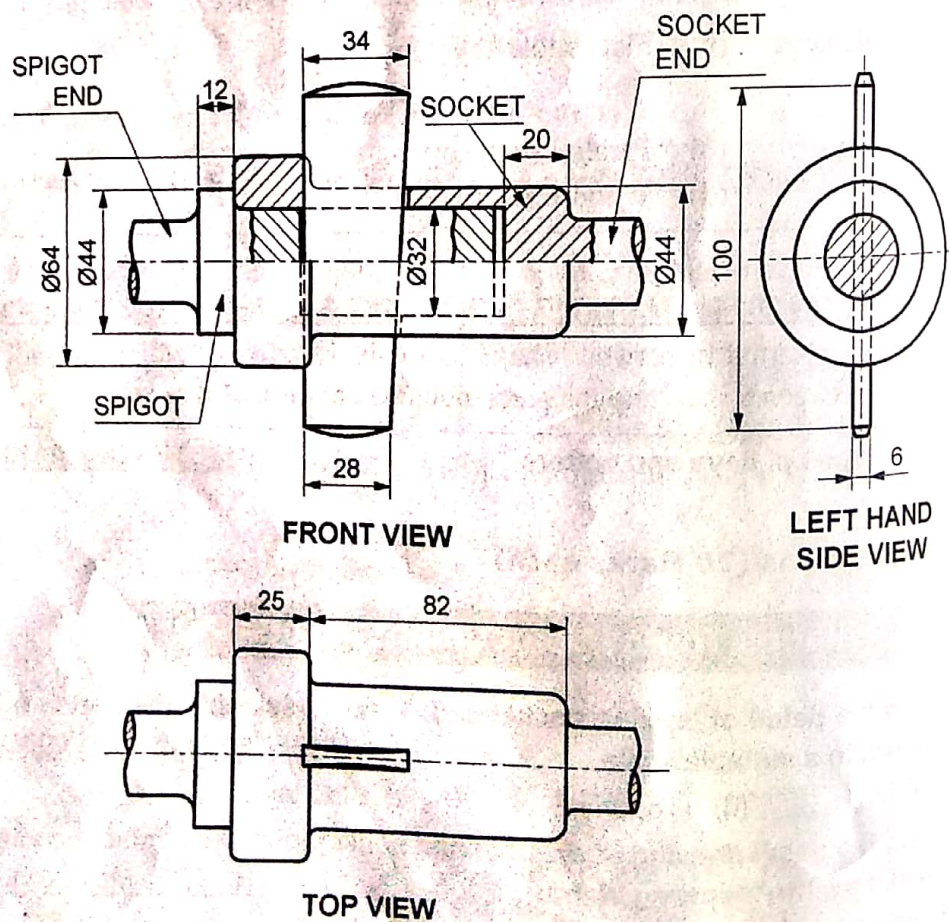
Round or pin key.



Feather key.



Ans. :



Syllabus Topic : Gib and Cotter Joint

Q. 3.11 The detail of Gib and Cotter joint are given below. Assemble the parts together and draw.
(HSBTE - May 2014, May 2016, 20 Marks) (G-I)

- (i) Front view (ii) Top view (iii) Side view

OR The detail part of a gib and Cotter joint assemble the parts together and draw

- (i) Front view upper half in section
(ii) Top view (iii) Side view

Use first angle projection.

(HSBTE - May 2014, 20 Marks) (G-I)

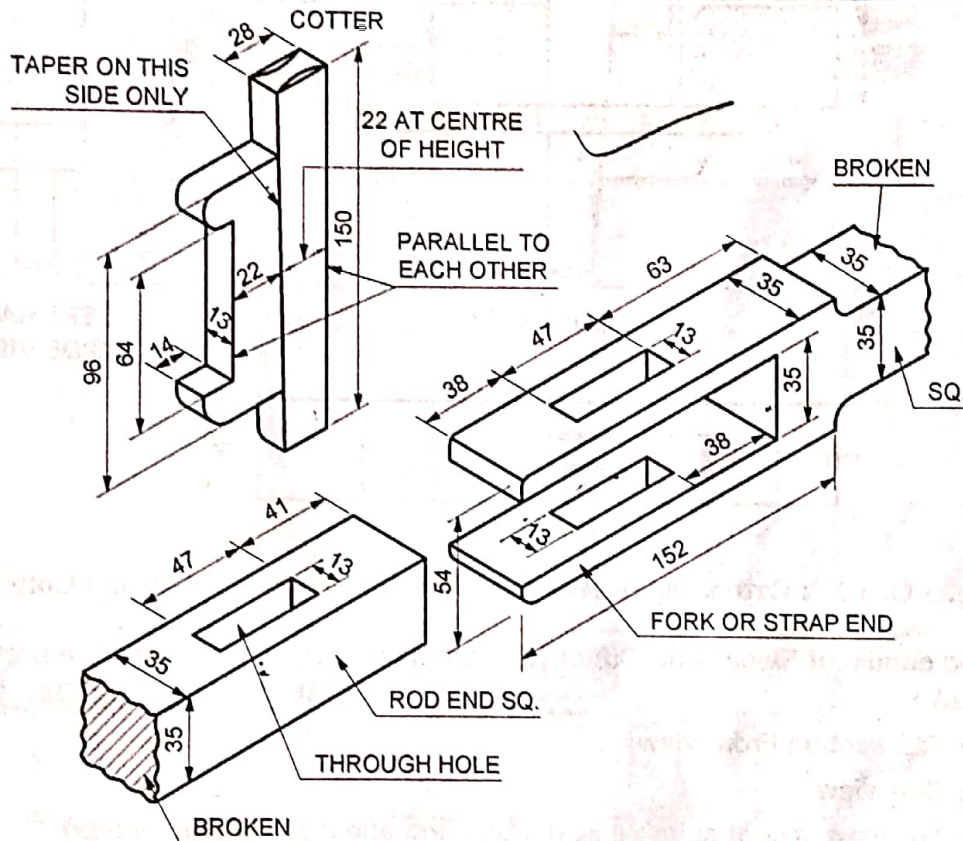


Fig. 1-Q. 3.11

Ans. :

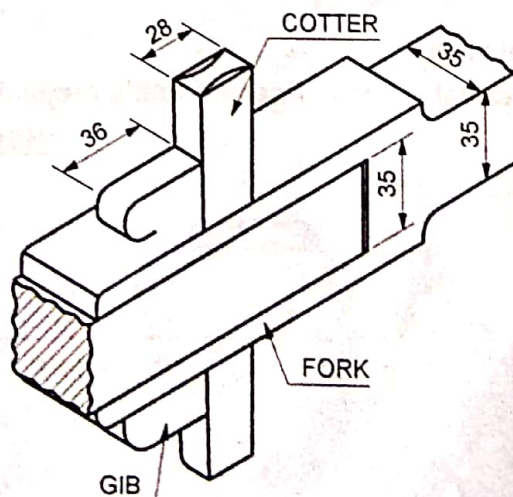


Fig. 2-Q. 3.11 : Assembly Drawing (Pictorial View) of Gib and Cotter joint



IMP Note : Students are advised not to draw the pictorial view of assembly, it is given for better understanding.

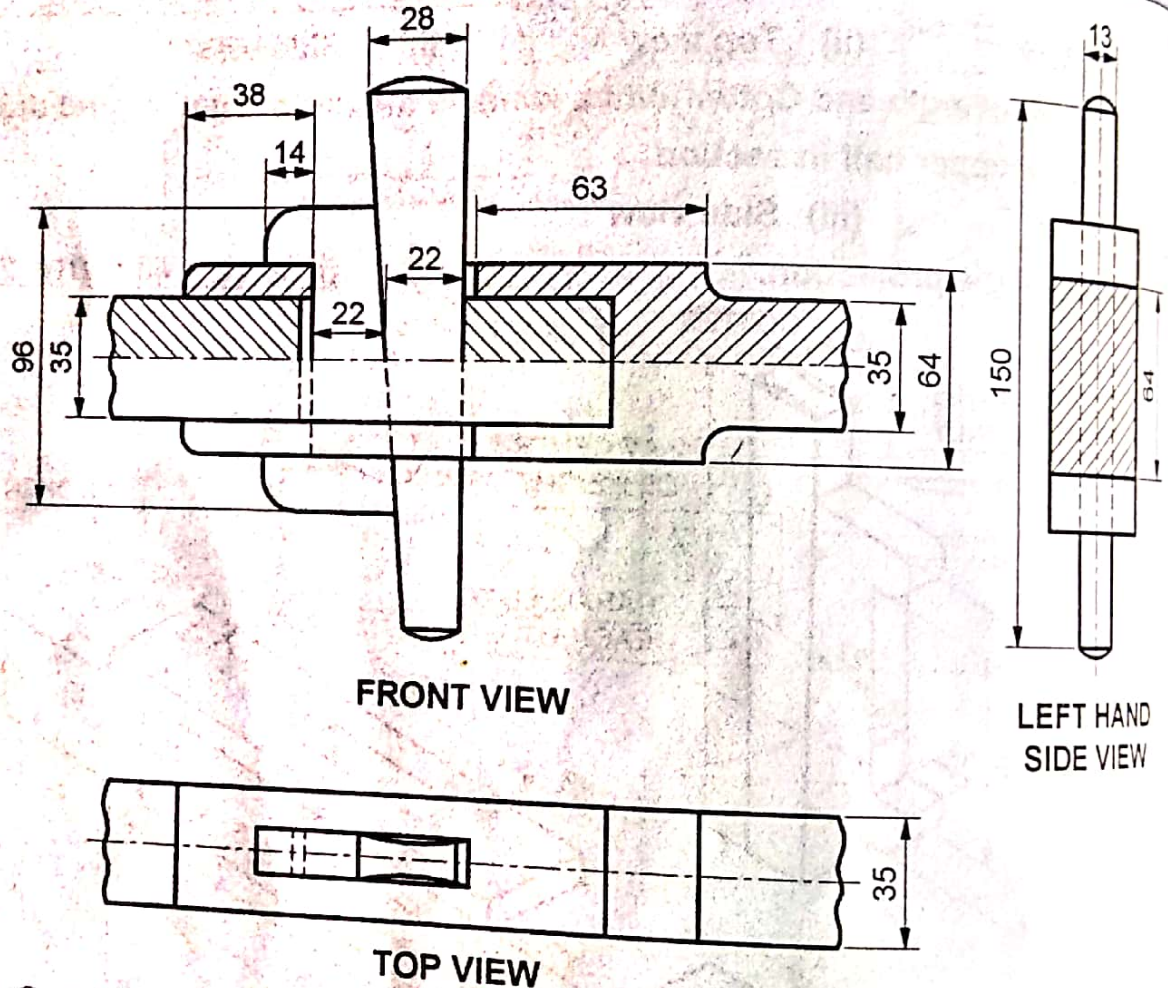


Fig. 3-Q. 3.11 : Orthographic Assembly Drawing (Views) of Gib and Cotter joint

Q. 3.12 The details of Sleeve and Cotter joint are given below. Assemble the parts together and draw :
(a) Full section Front view
(b) Side view
(c) Top view. Adopt suitable scale, Use first angle projection method.
(HSBTE - Dec. 2013, Dec. 2014)

OR

The details of Sleeve and Cotter joint are given below. Assemble the parts together and draw :
a) Full section Front view
b) Top view. Adopt suitable scale, Use first angle projection method.
(HSBTE - May 2015, 20 May 2016)

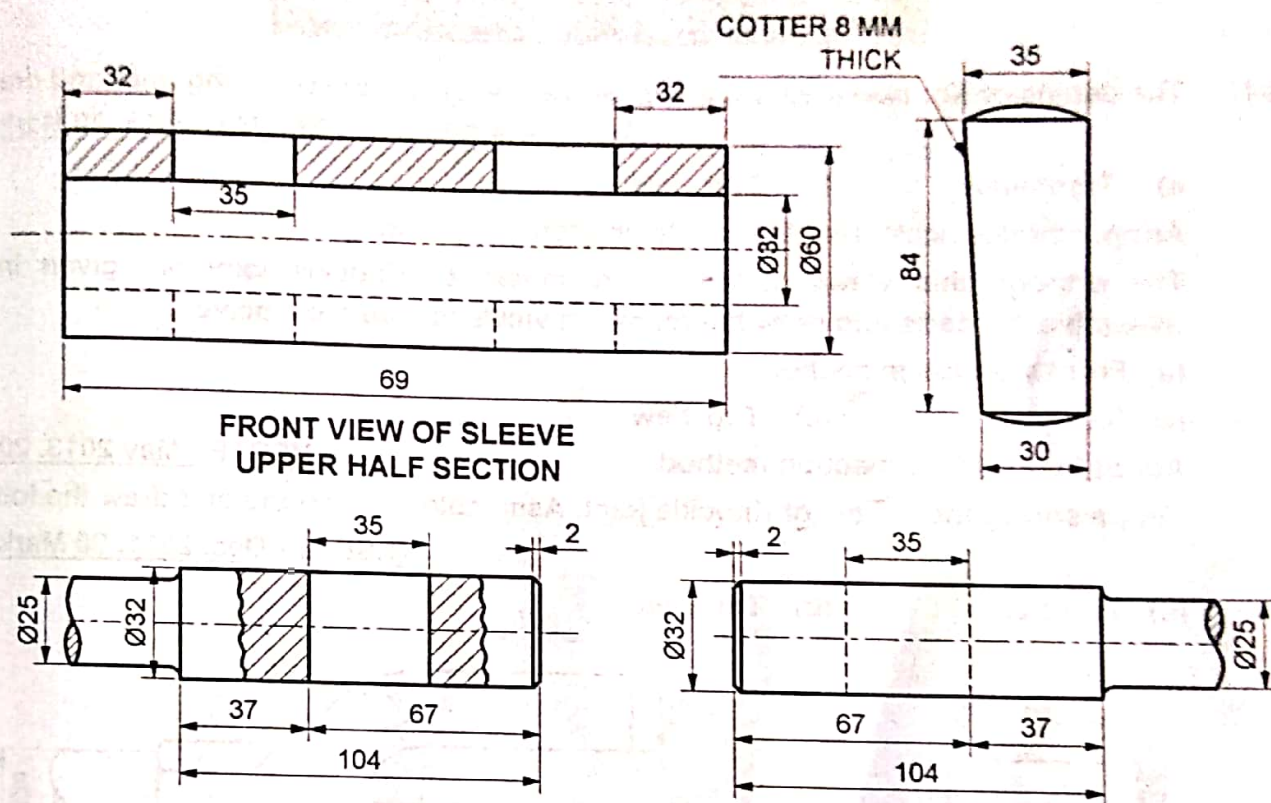


Fig. 1-Q. 3.12

Ans. :

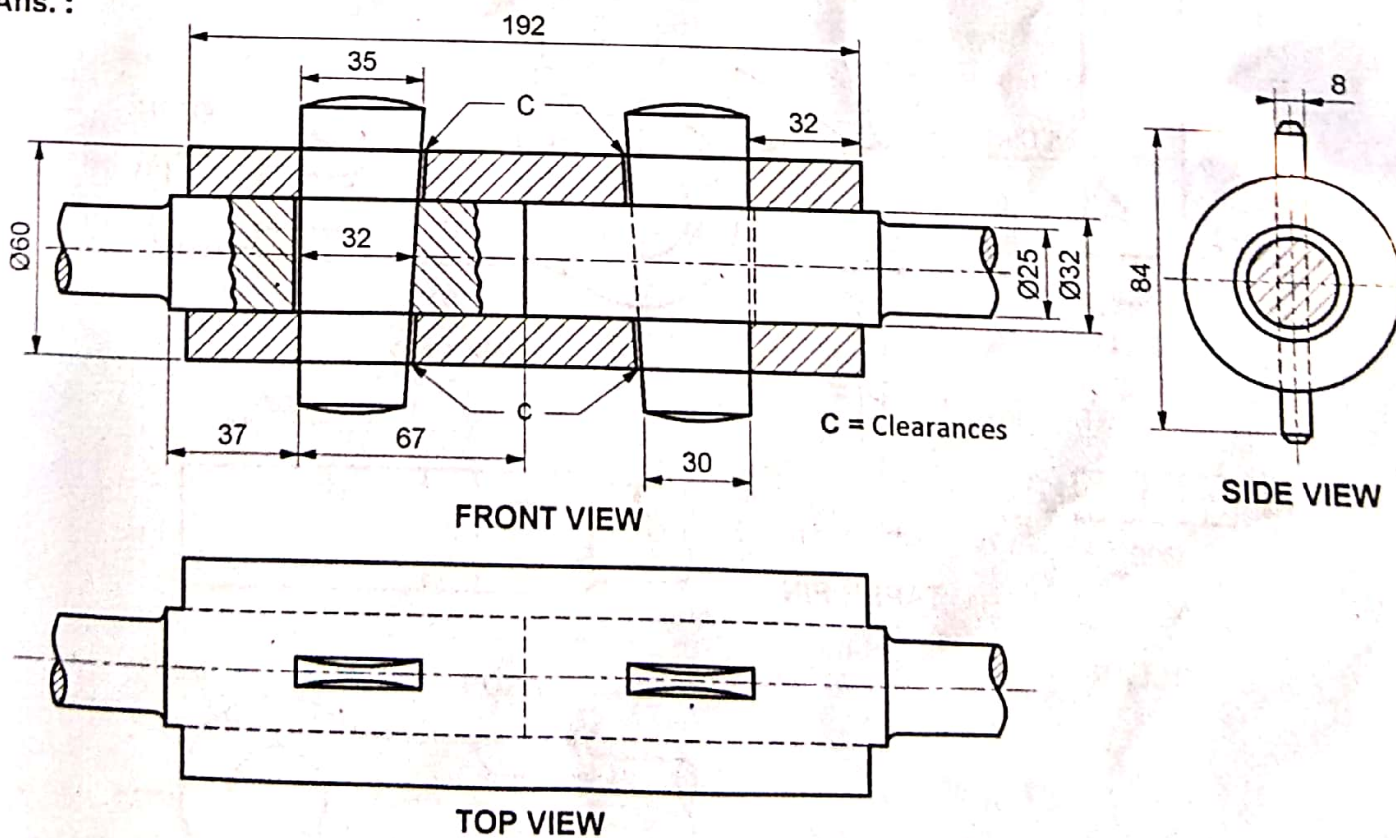


Fig. 2-Q. 3.12

Q. 3.13 The details of Knuckle joint are given below. Assemble the parts together and draw the following views:
(HSBTE - May 2014, May 2015, 20 Marks)

- a) Front view b) Top view

Adopt suitable scale, Use first angle projection method.

OR The orthographic views of various members of Knuckle joint are given below. Assemble the parts and draw the following views to a suitable scale.

- (a) Front view full in section (b) Side view (c) Top view

Adopt first angle projection method.

OR Figure shows the details of Knuckle joint. Assemble all the parts and draw the following views:
(HSBTE - May 2013, 20 Marks)
(HSBTE - Dec. 2011, 20 Marks)

(a) Front view

(b) Top view

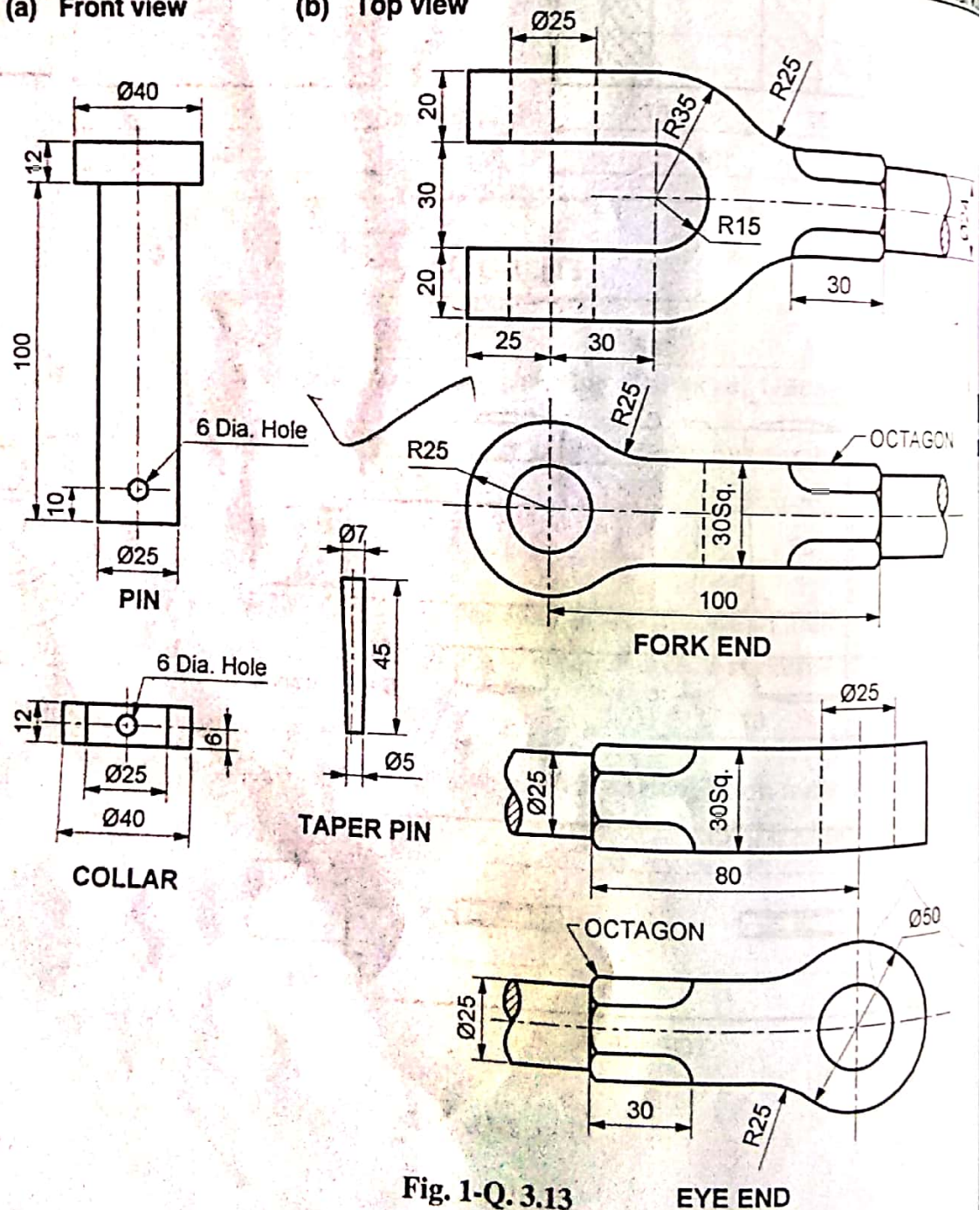


Fig. 1-Q. 3.13



Ans. :

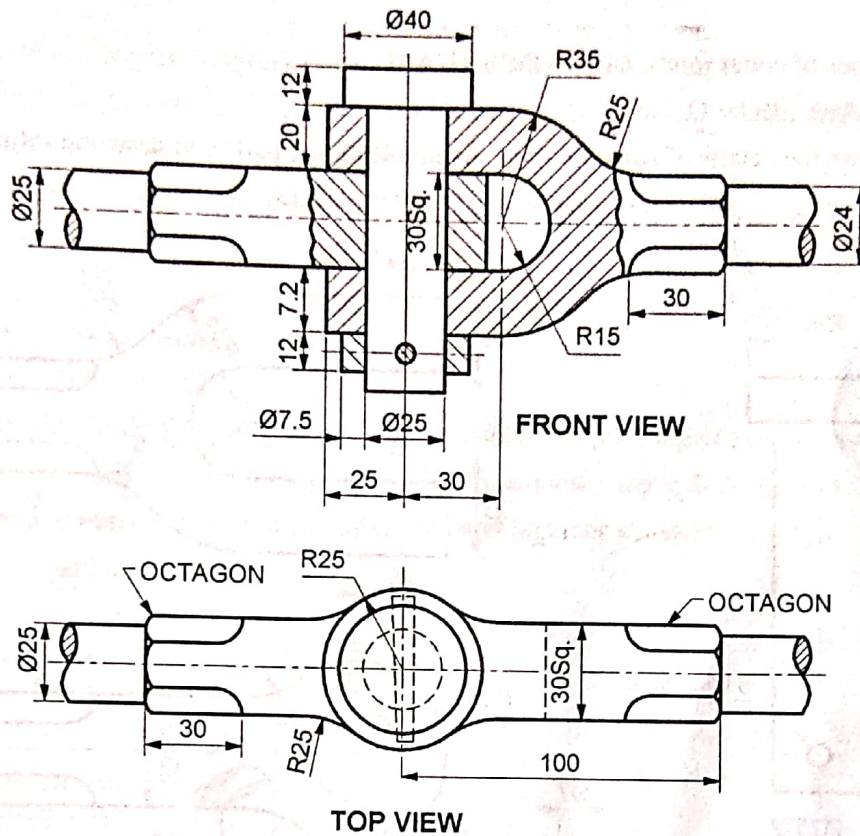


Fig. 2-Q. 3.13

HSBTE Questions and Answers**May 2011**

Q.1 Fig. Q. 1 shows the detail drawing of a spigot and socket joint. Assemble the various parts together and draw the following views.

(i) Sectional elevation

(ii) Side view. (Ans. : Refer Q. 3.10)

(20 Marks)

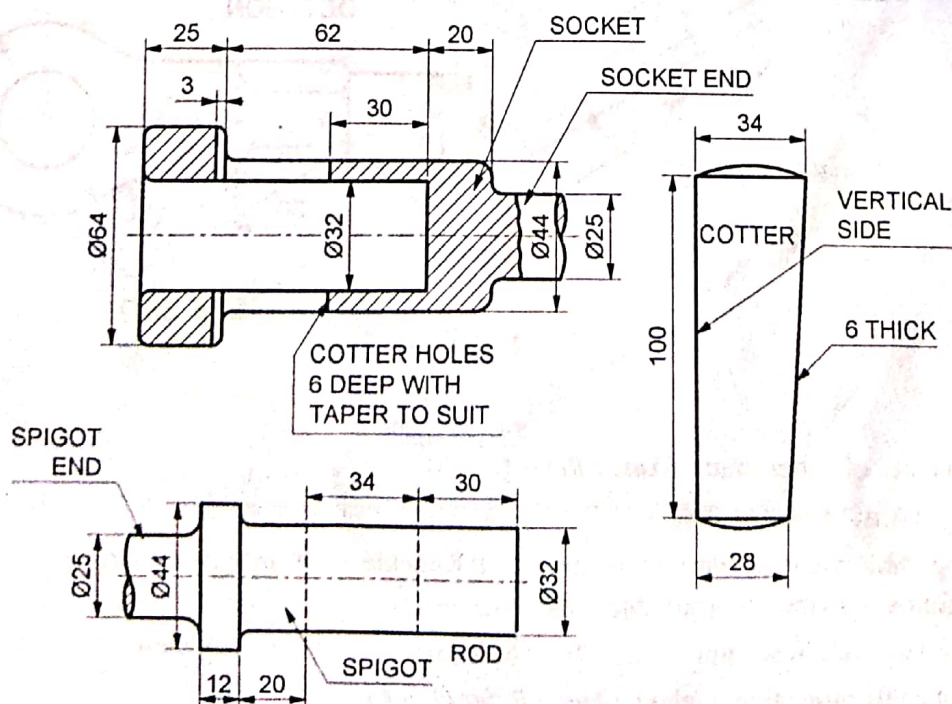


Fig. Q. 1