

PREBOARD EXAMINATION, FEB-2018

Subject - Engineering Graphics

SET-B

Class: XII

M. Marks: 70

Date: ,

Time: 3 Hrs

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General Instructions: -

- i) Attempt all the questions.
  - ii) Use both sides of drawing sheets, if necessary.
  - iii) All dimensions are in millimeters.
  - iv) Missing and mismatching dimensions, if any, may be suitably assumed.
  - v) Follow the SP: 46-2003 revised codes (with first angle method of projection)
  - vi) Accuracy, quality of construction and neatness will be duly rewarded.
  - vii) Number your answers according to your questions.
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Q.1 Answer the following multiple-choice questions. Print the correct choice on your drawing sheet (5)

1 – The end of the stud which is screwed in the body of casting with threaded hole is called.

- a) Nut end
- b) Metal end
- c) Close end
- d) Open end

2 – The portion of the shaft which rotates in the sleeve/bush of a bushed bearing is called as

- a) Journal
- b) Axle
- c) Rod
- d) Pipe

3 – Protected flange coupling is better than the unprotected flange coupling with regard to

- a) Protection from dirt
- b) Protection from water
- c) Protection from fine hazards
- d) Ensure safety.

4 – Why is a Hook bolt provided with a square neck?

- a) To prevent the rotation of the bolt while tightening
- b) To make the joint smooth
- c) To provide the bearing surface
- d) None of the above

5 – Which part of the solid C.I. pulley is used to hold up the belt?

- a) Rim
- b) Hub
- c) Key
- d) Shaft.

Q.2 a) Construct an isometric scale of length 70mm. (4)

b) Draw the isometric projection of a frustum of a hexagonal pyramid having top base edge 30mm and bottom base edge 40 mm with a height of 60mm, keeping its axis perpendicular to H.P and two of its base sides parallel to the V.P.

(7)

c) A cylinder of diameter 40mm and height 50mm is placed centrally on the top surface of a circular disc of diameter 60mm and height 20mm. The common axes are perpendicular to the H.P. Draw an isometric projection of the solids to isometric scale. (13)

Give all the dimensions, axis and direction of viewing for both (b) and (c)

Q.3 a) Draw to scale 1 : 1, the standard profile of a METRIC SCREW THREAD (internal), (8)

taking an enlarged pitch = 50 mm. Give all the standard dimensions.

OR

a) Draw to scale 1 : 1, the Front View of the assembly of a SQUARE HEAD BOLT (Across Flats) of nominal diameter,  $d = 30$  mm, with a Hexagonal Nut (Across Corners) and a Washer, keeping the axis horizontal. Length of the bolt = 120 mm, Threaded portion of bolt = 80 mm and Thickness of washer = 4 mm. Give all the standard dimensions.

b) Sketch freehand, the front view and the top view of a COUNTER SUNK HEAD ( $60^\circ$ ) RIVET of diameter = 20 mm, keeping its axis vertical. Give all the standard dimensions. (5)

OR

b) Sketch freehand, three views of a WOODRUFF KEY for using on a shaft of diameter = 60 mm. Give all the standard dimensions.

Q. 4. Figure 1 shows the details of the parts of a Sleeve and cotter joint. Assemble these parts correctly and then draw to scale 1:1 its following views: (28)

(iii) Front view, upper half in section.

(iv) Side view as viewed from right.

Print the title and the scale used. Draw the projection symbol. Give 6 important dimensions.

OR

Figure 2 shows the assembly of an Open Bearing. Disassemble the parts and then draw its views of the following parts to scale 1:1. Keep the same position of both Base and the Bush with respect to H.P and V.P

(iii) Base:

(c) Front view, showing right half in section.

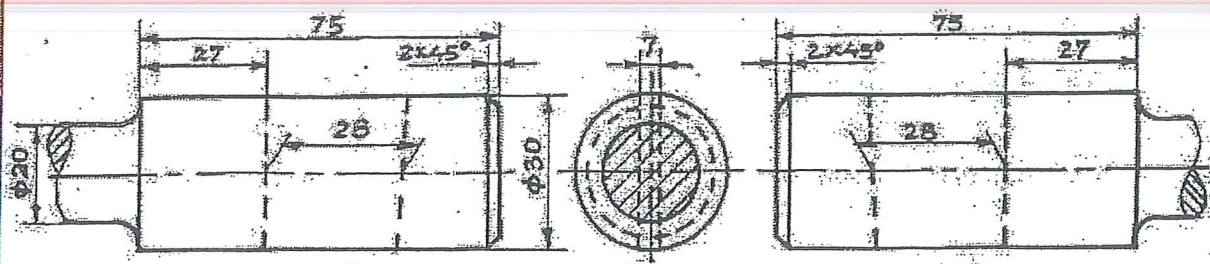
(d) Top view

(iv) Bush:

(c) Full sectional Front view

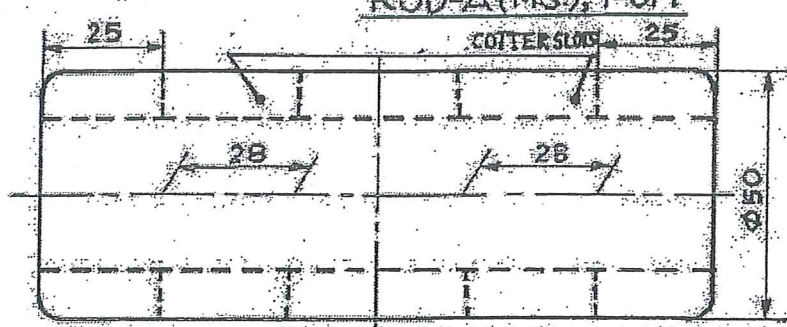
(d) Top view

Print the title and the scale used. Draw the projection symbol. Give 6 important dimensions.

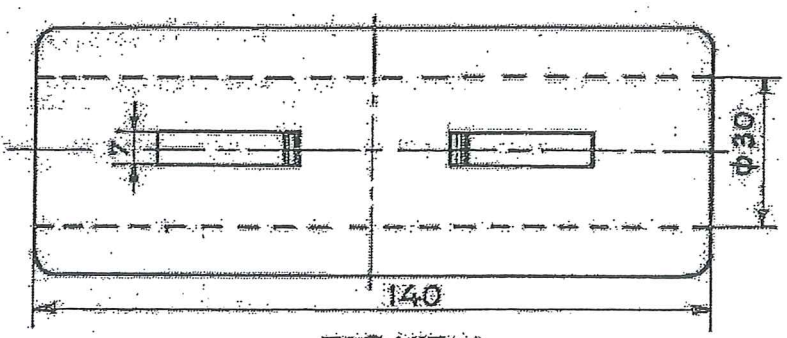


FRONT VIEW LEFT SIDE VIEW  
 ROD-A (M.S.), 1-OFF

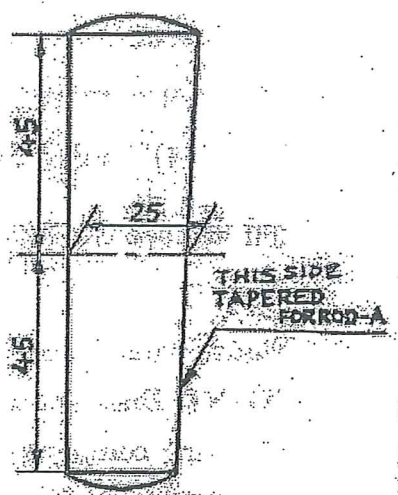
FRONT VIEW  
 ROD-B (M.S.), 1-OFF



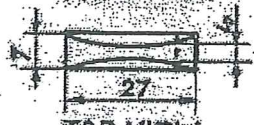
FRONT VIEW



TOP VIEW  
 SLEEVE (M.S.), 1-OFF



FRONT VIEW



TOP VIEW  
 COTTER (M.S.), 2-OFF

**FIG 1. SLEEVE AND COTTER JOINT**

NOTE : ALL ROUNDS AND FILLETS R4

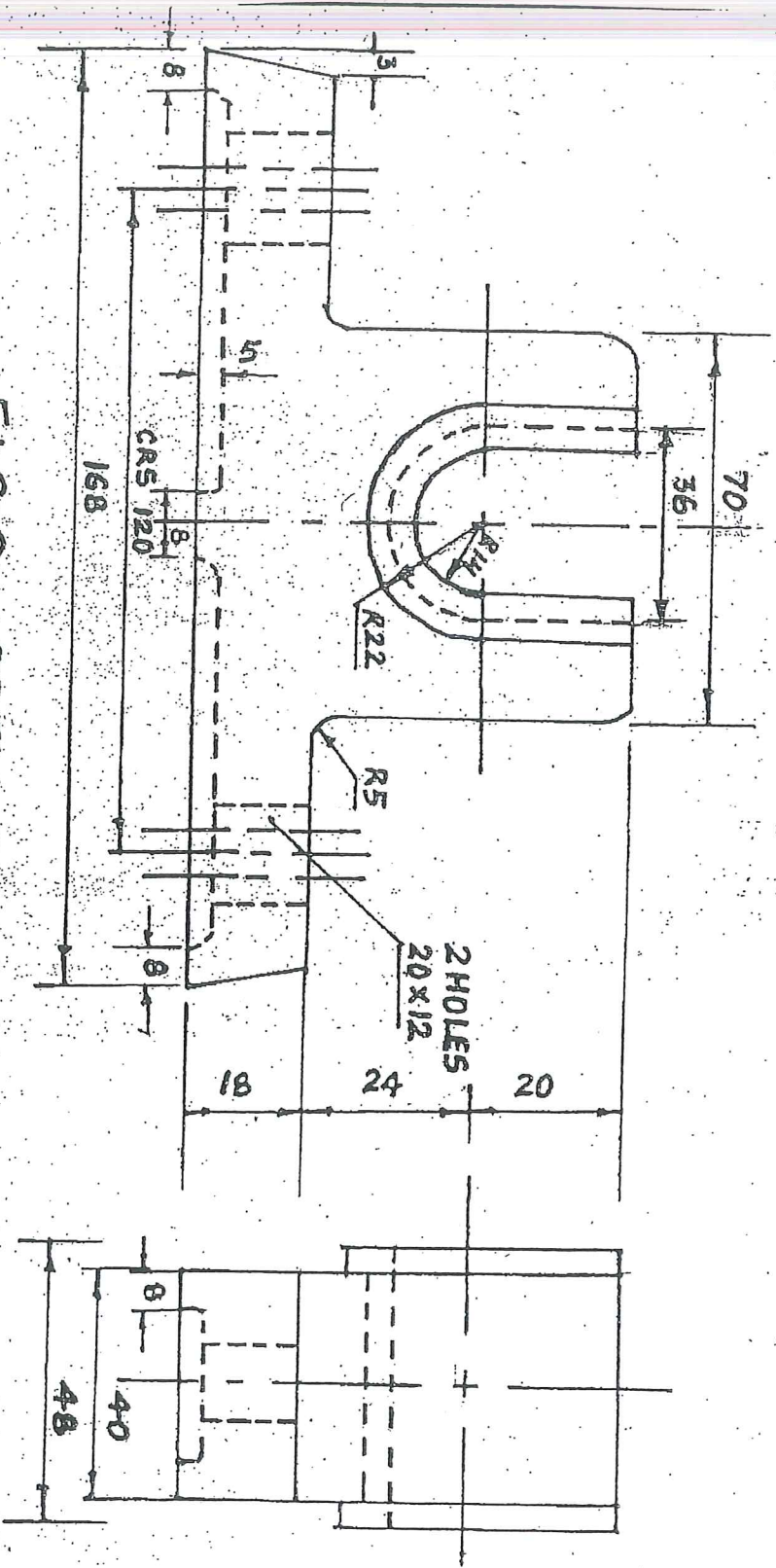


FIG 2. OPEN BEARING (ASSEMBLY)

NOTE: FIGURE NOT TO SCALE USE THE GIVEN DIMENSIONS FOR DRAWING SOLUTIONS