THE INSTUTUTION OF ENGINEERS SRI LANKA

PART I EXAMINATION – MAY 2009

102 - PRESENTATION OF ENGINEERING INFORMATION – PAPER II

Time Allowed – Four (04) Hours **Date of Examination: May 2009**

Before start answering the question paper, read the instructions given below and adhere to these instructions.

- This question paper has only one question. Answer the question completely.
- Before answering the questions read and understand the given question carefully.
- Sketch the solution on a blank paper before drawing it on the given drawing sheet. If you wish, you could attach the sketch to your answer script.
- It is necessary that all views relevant to the solution are projected simultaneously.
- Draw standard cage, title block, symbols, etc.
- All construction details, centre lines, etc. should be visible.
- It is extremely important that Index No. is written at the relevant place on the drawing paper.
- Assume any missing dimensions suitably.
- Marks will be deducted if the above instructions are not adhered to.

(15)

(12)

Question

Figure given shows exploded orthographic views of a **"PIPE VICE"**. Pipe vice is a holding or clamping device used by plumbers prior to work on the pipes. It consists of following components.

1. Vice Body
2. Lower Jaw
3. Upper Jaw
4. Handle Cap. (Nos.2)
5. Handle
6. STD. Hexagonal Nut
7. Guide Bar
8. Guide Link
9. Hexagonal Bolt (Nos.2)
10. Vice Screw.

Assemble the above components placing them correctly. You may follow the following guidelines to assemble the given components.

The lower jaw (2) is fixed to the lower part of the vice body (1) with two hexagonal bolts (9). The guide bar (7) is sent through the hole in the upper part of the vice body (1) and screwed to the upper jaw (3). The screw (10), which engages with the nut of the vice body (1), is seated on the upper jaw (3) at its lower end. The guide link (8) couples the screw (10) and the guide bar (7). The vice screw (10), guide bar (7), guide link (8) and upper jaw (3) when assembled, can be made to move up and down as a sub-assembly with respect to the vice body (10) by means of removable handle (5). The handle, which has a circular cross section, needs its ends to be capped.

The curve "A" on the web of the **Vice Body** is a curve whose eccentricity is less than one (e<1) and its semi-major and semi-minor axes are 85mm and 62mm respectively.

(a) Draw the following views in **third angle** projection to a scale of full size.

(16)

(13)

(i) Sectional Front Elevation on P-P.

(ii) Sectional end Elevation on Q-Q.

(iii) Plan projected from view (a).

(b) Give a minimum of five main dimensions of the assembly.

(c) Indicate the symbol of projection.

(d) Print the main title, sub titles and scale.

Satisfy following requirements when assemble and present your answer.

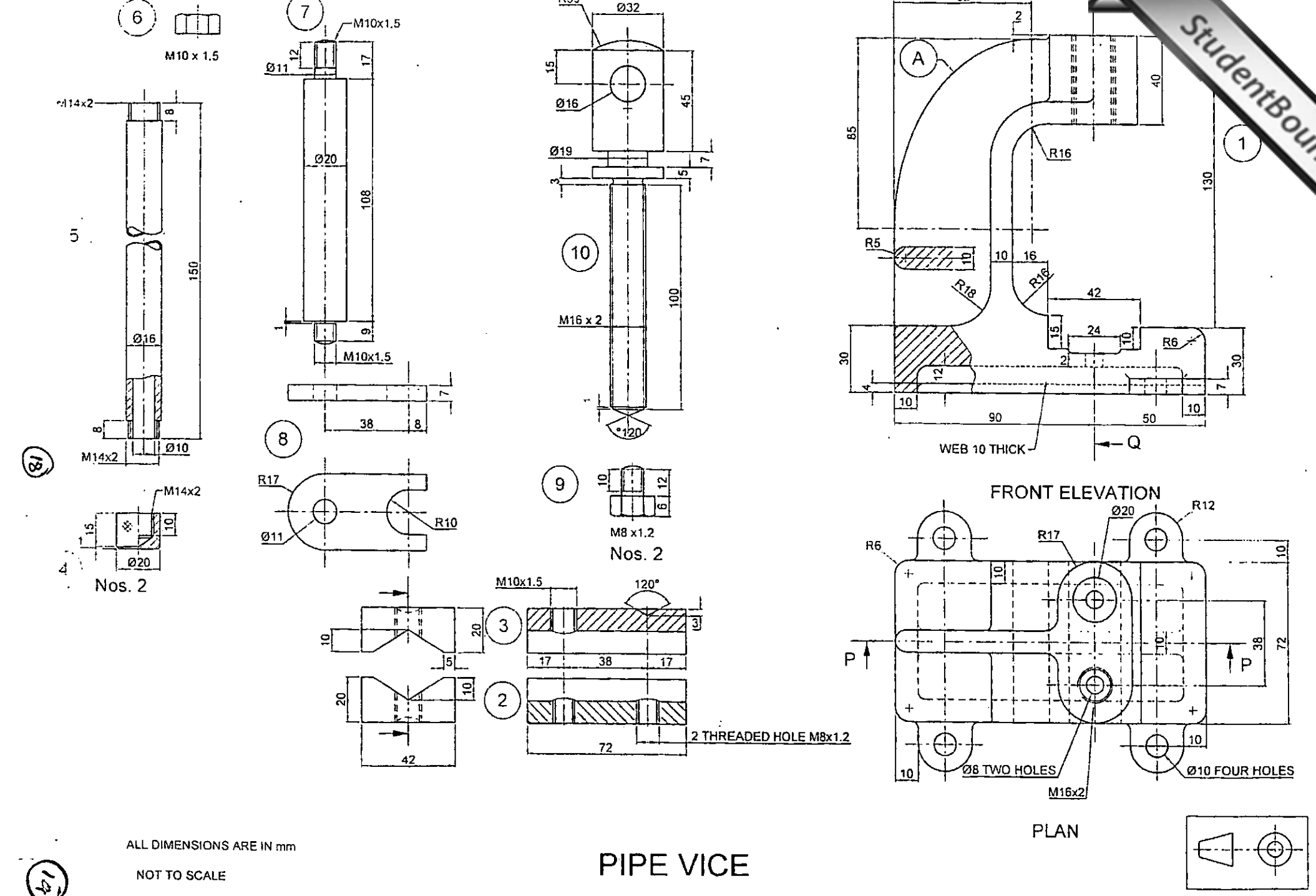
(i) The distance between the two jaws as 6mm.

(ii) The **Handle** in symmetrical position with respect to the axis of the **Vice Screw** and parallel to the longer side of the base of the **Vice Body.**

Radii of casting curves may be taken suitably. Do not present Hidden details.

(17)

(13)



ALL DIMENSIONS ARE IN mm

NOT TO SCALE

PIPE VICE