

**NATIONAL BUSINESS AND TECHNICAL EXAMINATIONS BOARD NATIONAL  
TECHNICAL CERTIFICATE EXAMINATION**

**BUILDING / ENGINEERING DRAWING**

PAPER II (PRACTICAL)

(60 Marks)

**TIME:** 3 Hours

PAPER CODE:

193-2

**GENERAL INSTRUCTIONS:**

DO NOT OPEN THIS QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO. While you are waiting, read the following instructions carefully.

This paper consists of TWO Sections. Section A is a Mechanical drawing for CANDIDATES in Engineering and Miscellaneous Trades. Section B is Building Drawing for CANDIDATES in some Construction Trades. The drawing must be clearly lined in pencil. Where dimensions are omitted or not appropriate use your discretion as to the dimension to be used.

Two A2 (420 x 594)mm drawing sheets are provided. Excepts where otherwise stated, you may use any drawing aid including French curves. All dimension on the diagrams and specifications are given in millimeters.

The code for this paper is 193-2

Write it in the space provided on your drawing sheet.

**SECTION A**  
**MECHANICAL DRAWING**

(60 Marks)

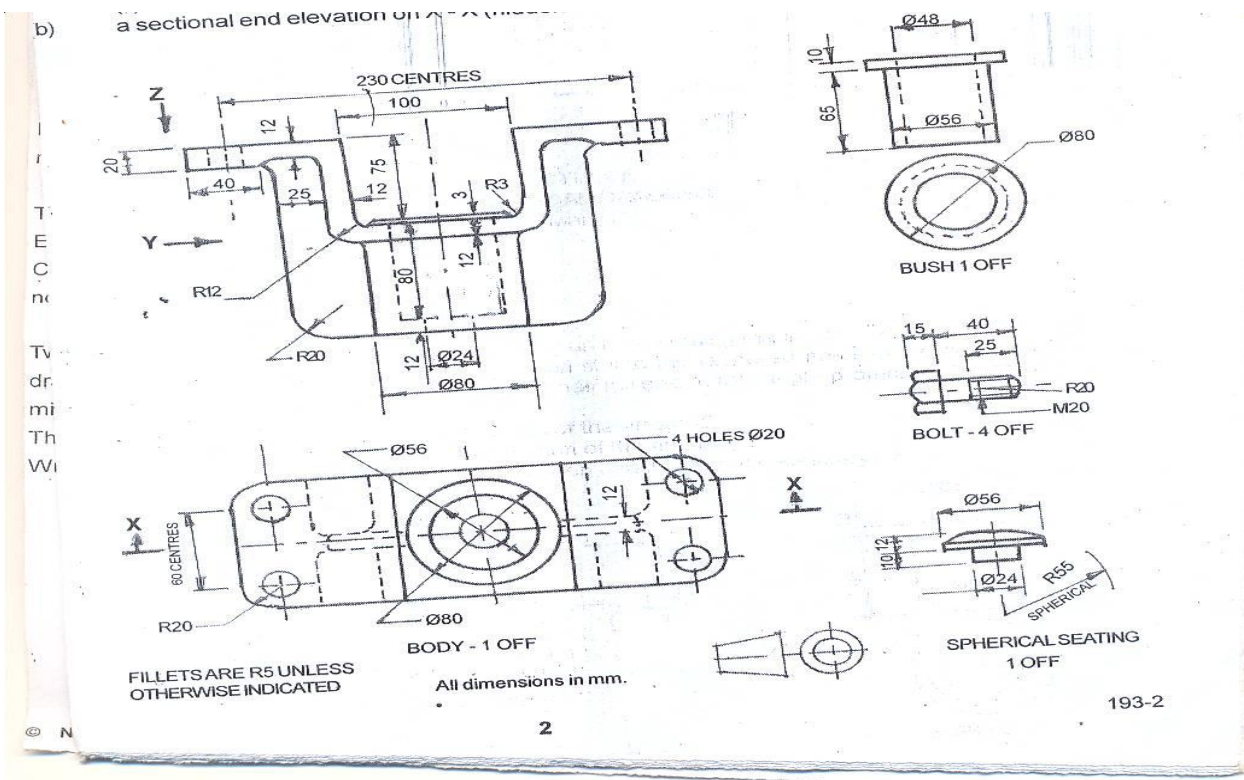
Time: 3 Hours

**CONSTRUCTION:**

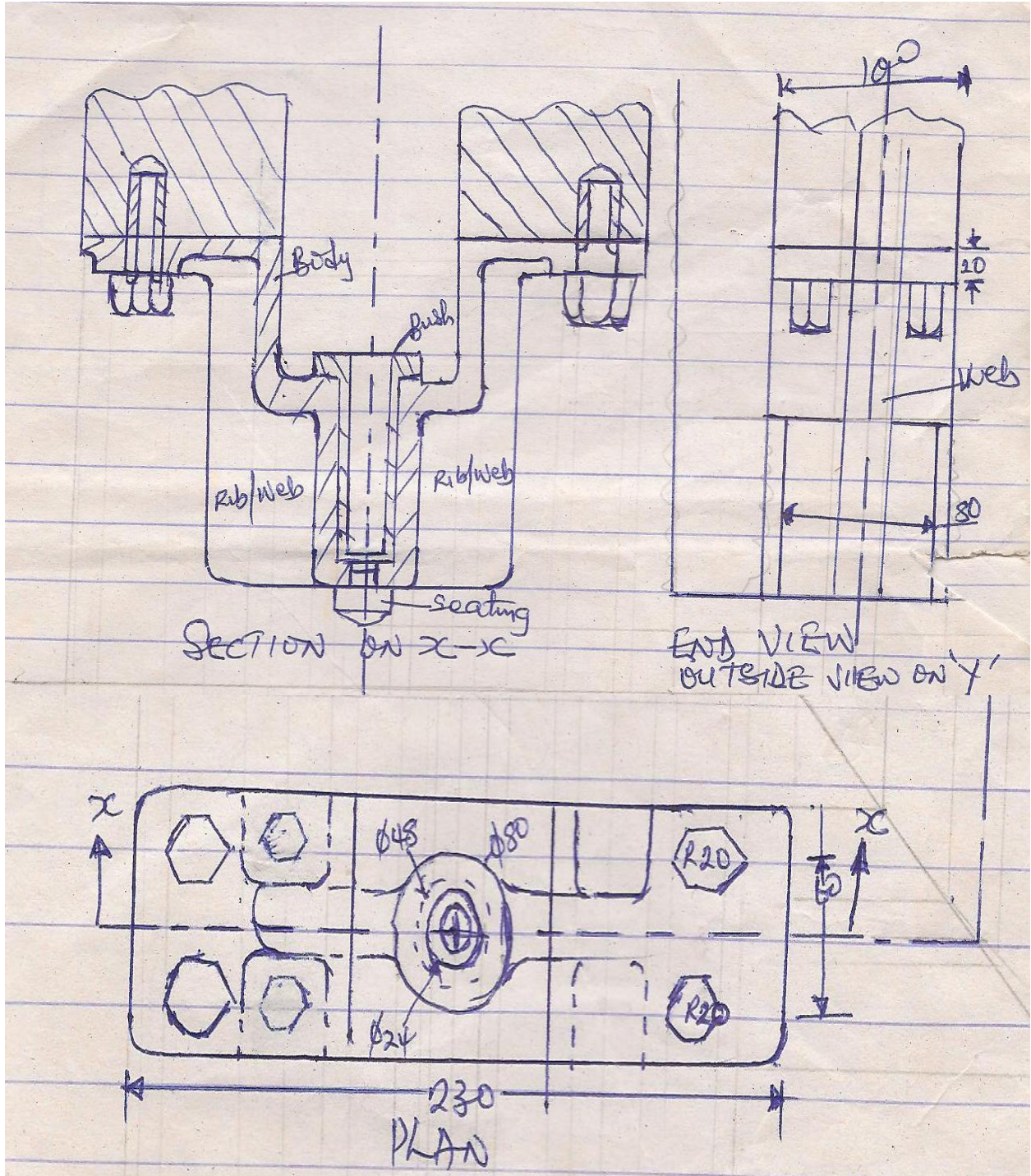
Answer Question No. 1 and any other two.

The diagrams below show the details of a lifter unit of a bottling machine. The until is attached to the underside of the washer by the four bolts which fit into the tapered holes in the base plate of the machine. With the part fully assembled. Draw half full size in first angle projection, the following:

- a) (i) a plan looking in the direction of the arrow 'Z'
- (ii) an end elevation in the direction of the arrow 'Y'
- b) a sectional end elevation on X – X (hidden details are not necessary).



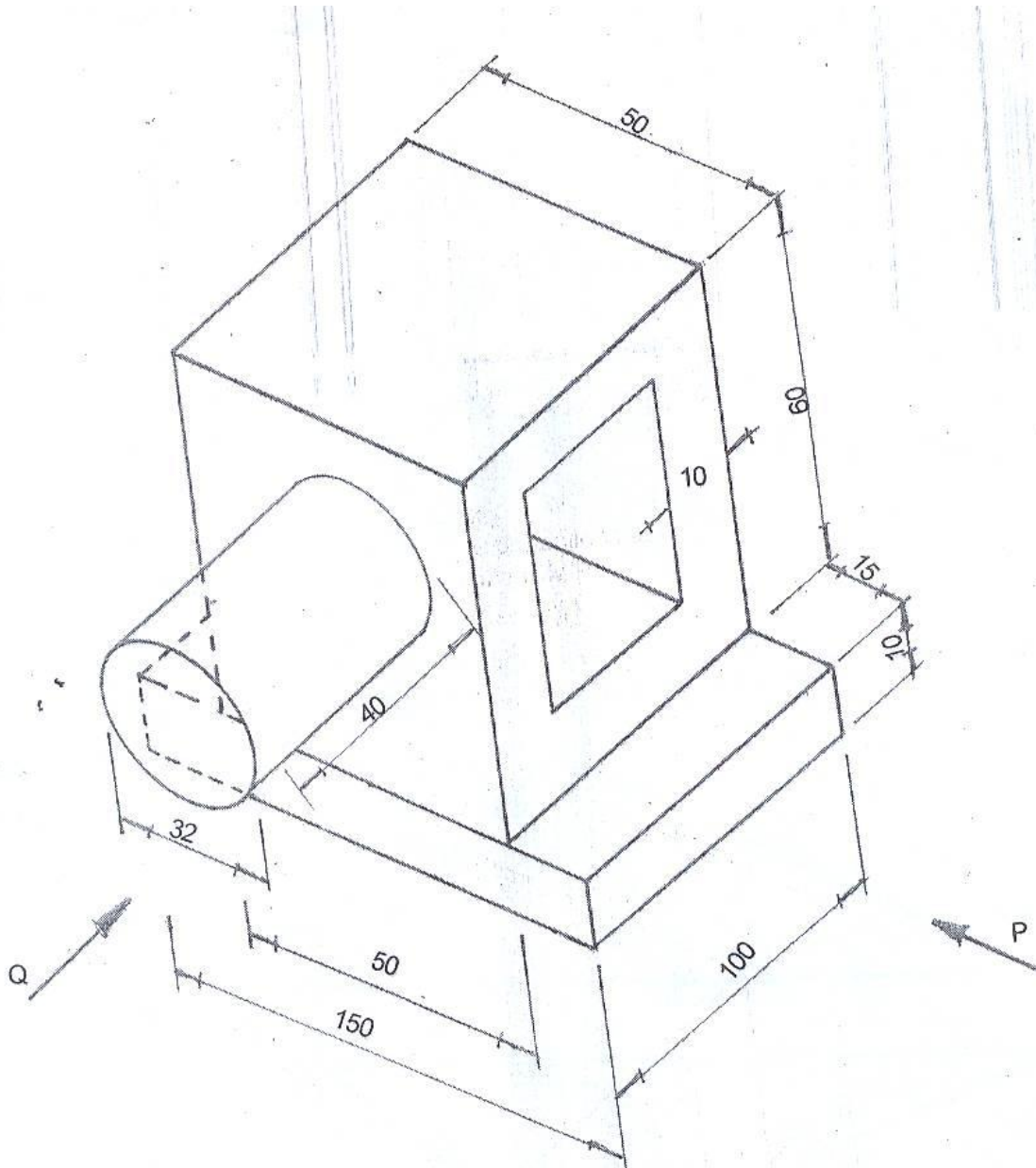
ANSWER.



2. The drawing below shows a guide block.

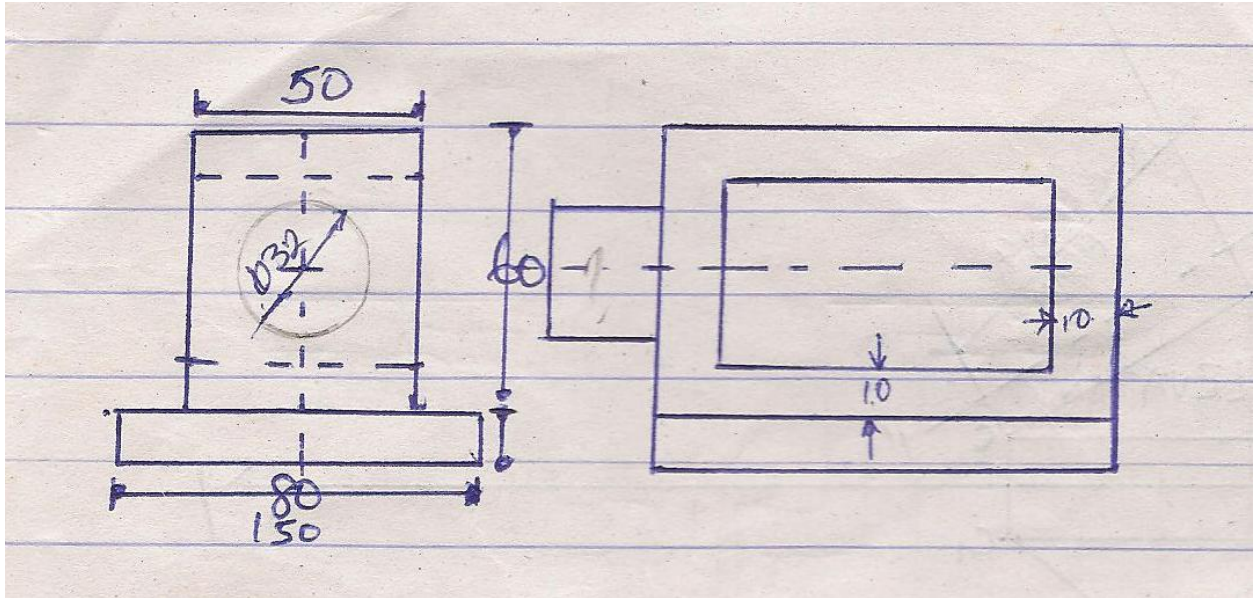
Draw to full size scale and in third angle projection the:

- (i) Front elevation in the direction of arrow 'P'
- (ii) Side elevation in the direction of arrow 'Q'



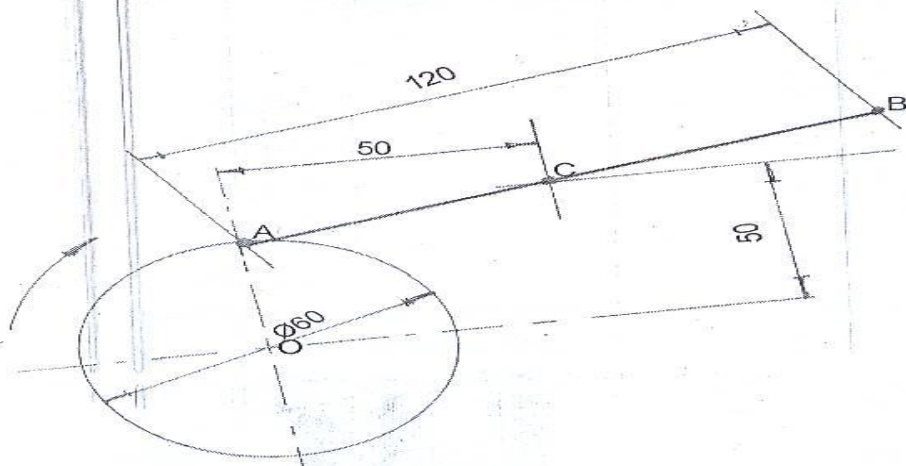
All dimensions in mm

ANSWER

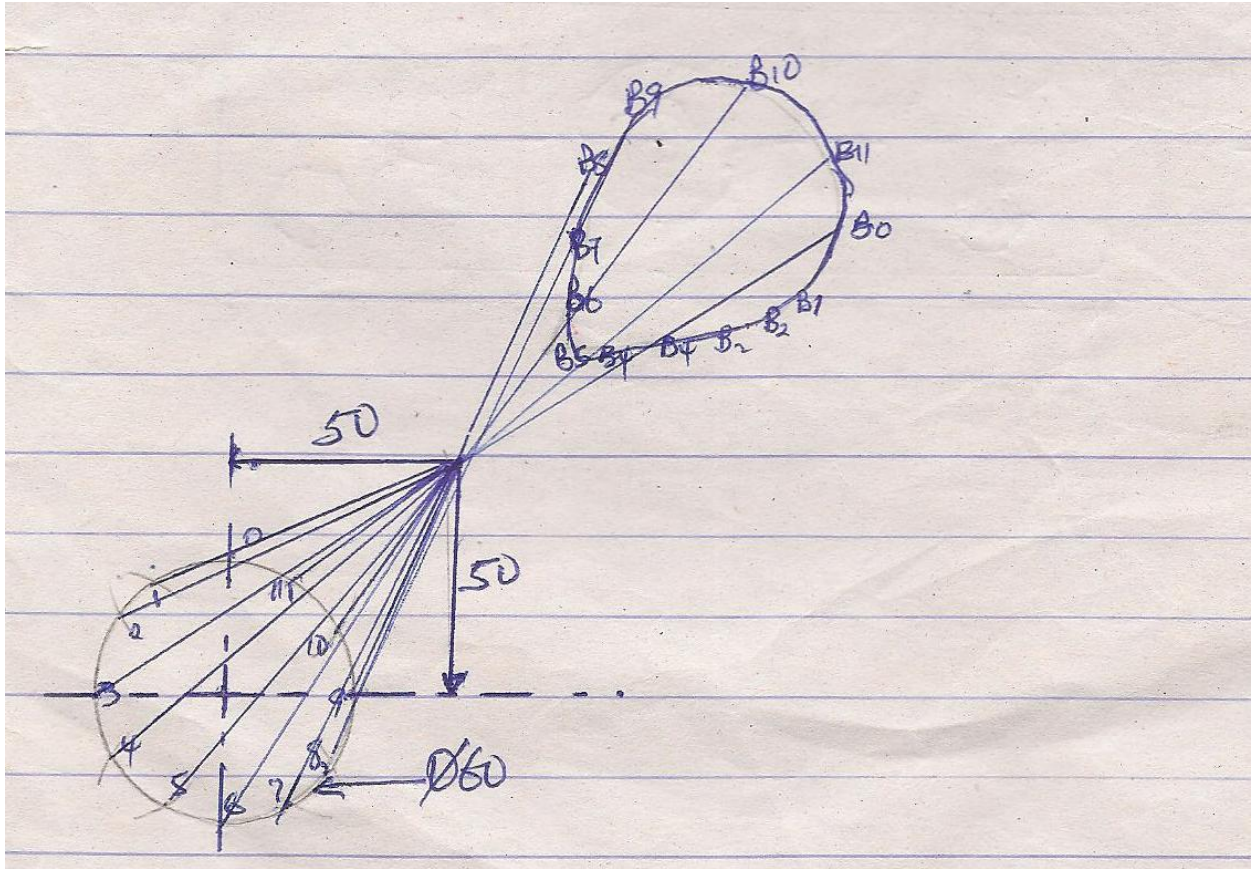


3. Draw the locus of the centre of the end of the rod at B as the  $\text{Ø}60$  disc rotates about 'O'

Draw the locus of the centre of the end of the rod at B as the  $\text{Ø}60$  disc rotates a

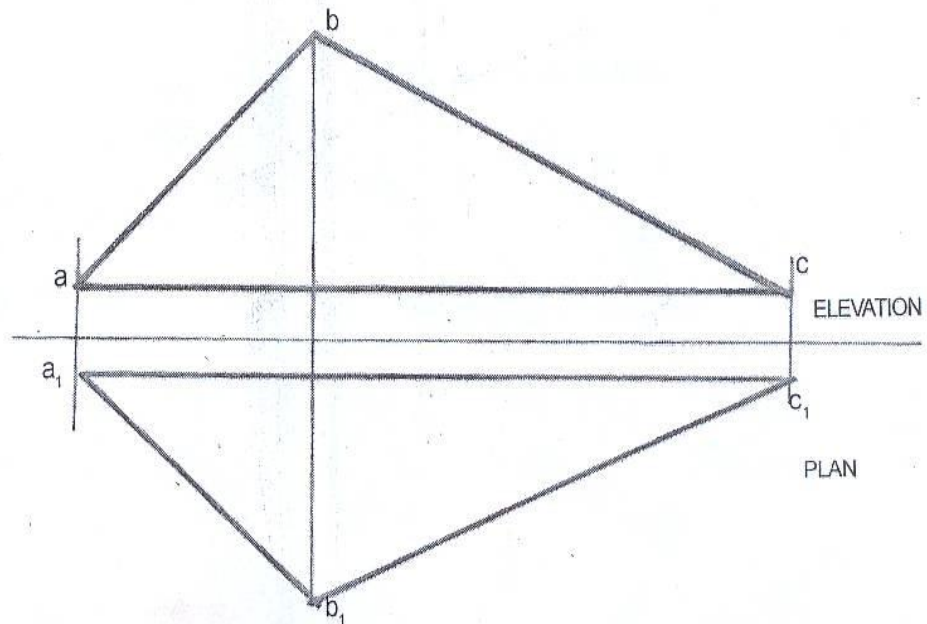


ANSWER

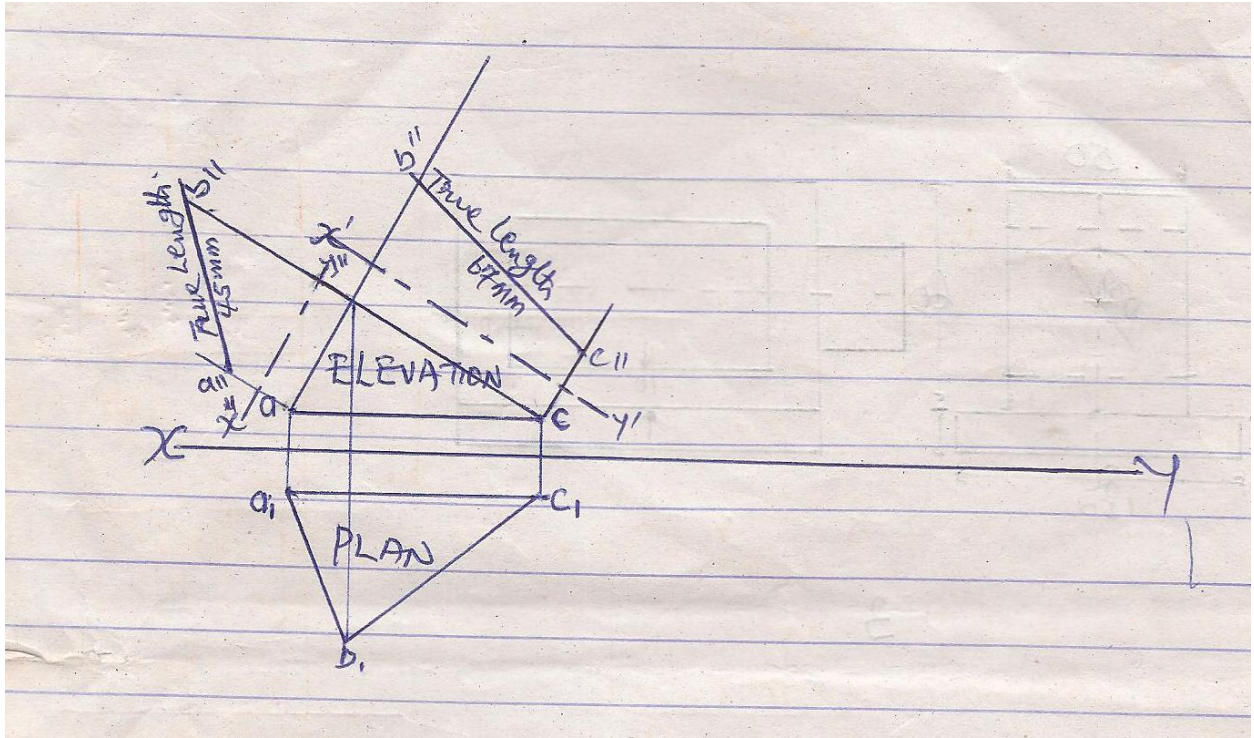


4. Find the true lengths of  $ab$  and  $bc$  in the figure below.

Given that  $ab = a_1b_1 = 35\text{mm}$ ,  $bc = b_1c_1 = 60\text{mm}$  and  $ac = a_1c_1 = 70\text{mm}$



ANSWER



**SECTION B**  
**BUILDING DRAWING**

(60 Marks)

**Time: 3 Hours**

**INSTRUCTIONS:**

This section comprises ONE compulsory question.

Accuracy and good draughtmanship qualities are essential. Carefully layout is also important.

All specifications and dimensions are given in millimeters.

**5. Question**

The attached drawing shows a two Bedroom Bungalow. Draw the:

- (a) Given FLOOR PLAN to scale 1:100.
- (b) FRONT ELEVATION looking in the direction of arrow 'A' to scale 1:100,
- (c) RIGHT END ELEVATION to scale 1:50.
- (d) SECTIONAL ELEVATION through X – X use scale 1:100

**USE THE FOLLOWING DATA**

WALLS -150 thick blockwork

FOUNDATION FOOTING – 150 X 450

HARDCORE – 300 thick

CONCRETE FLOOR SLAB – 100 thick oversite

FLOOR FINISH – 50 screed

ROOF – Gable roof with Aluminum covering, 1200 Rise and H.W. Trusses.

**DOORS AND WINDOWS SCHEDULE**

D1 = 1200 X 2100

W1 = 1800 X 1200

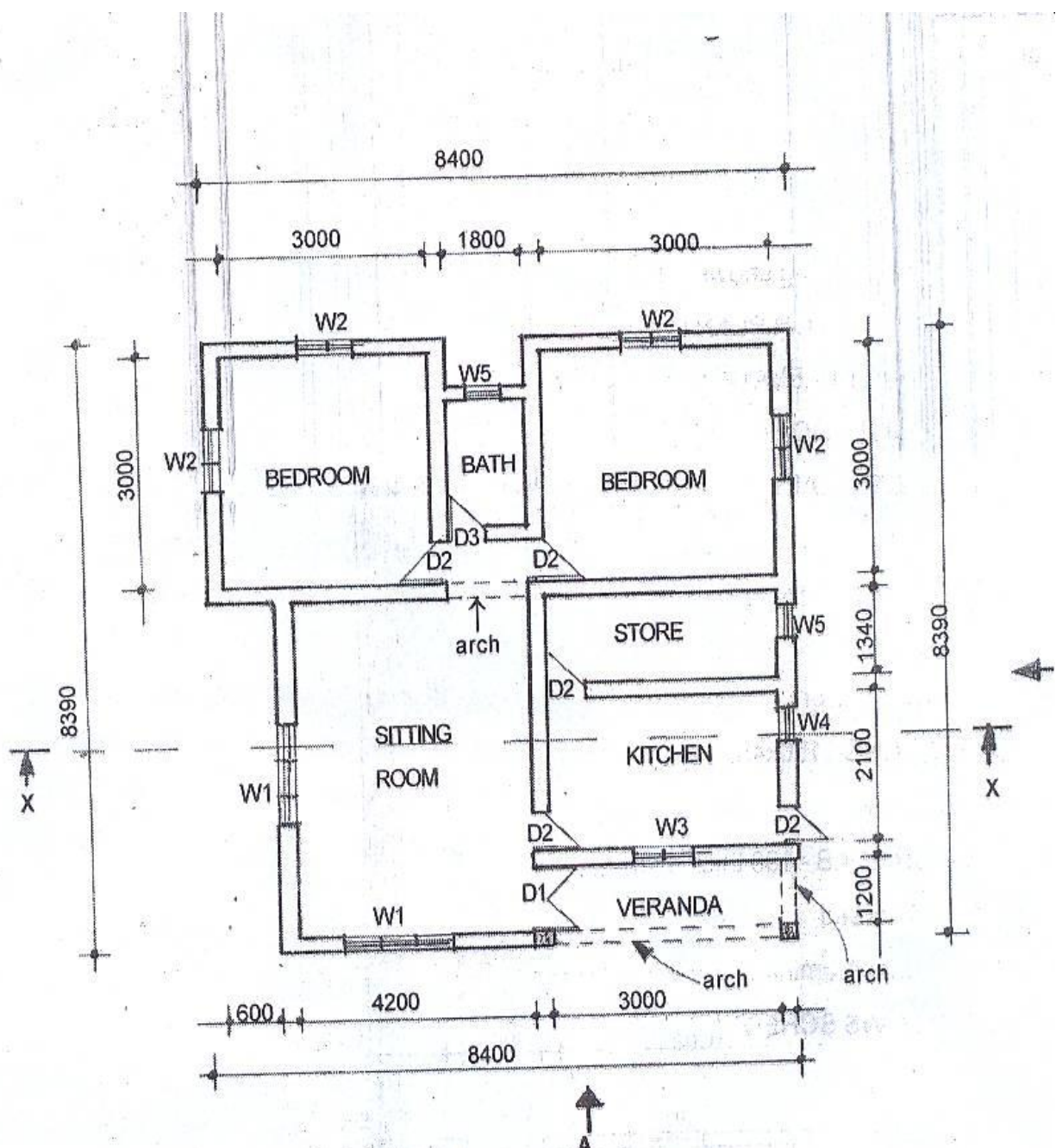
D2 = 900 X 2100

W2 = 900 X 900

D3 = 750 X 2100

W3 = 600 X 600

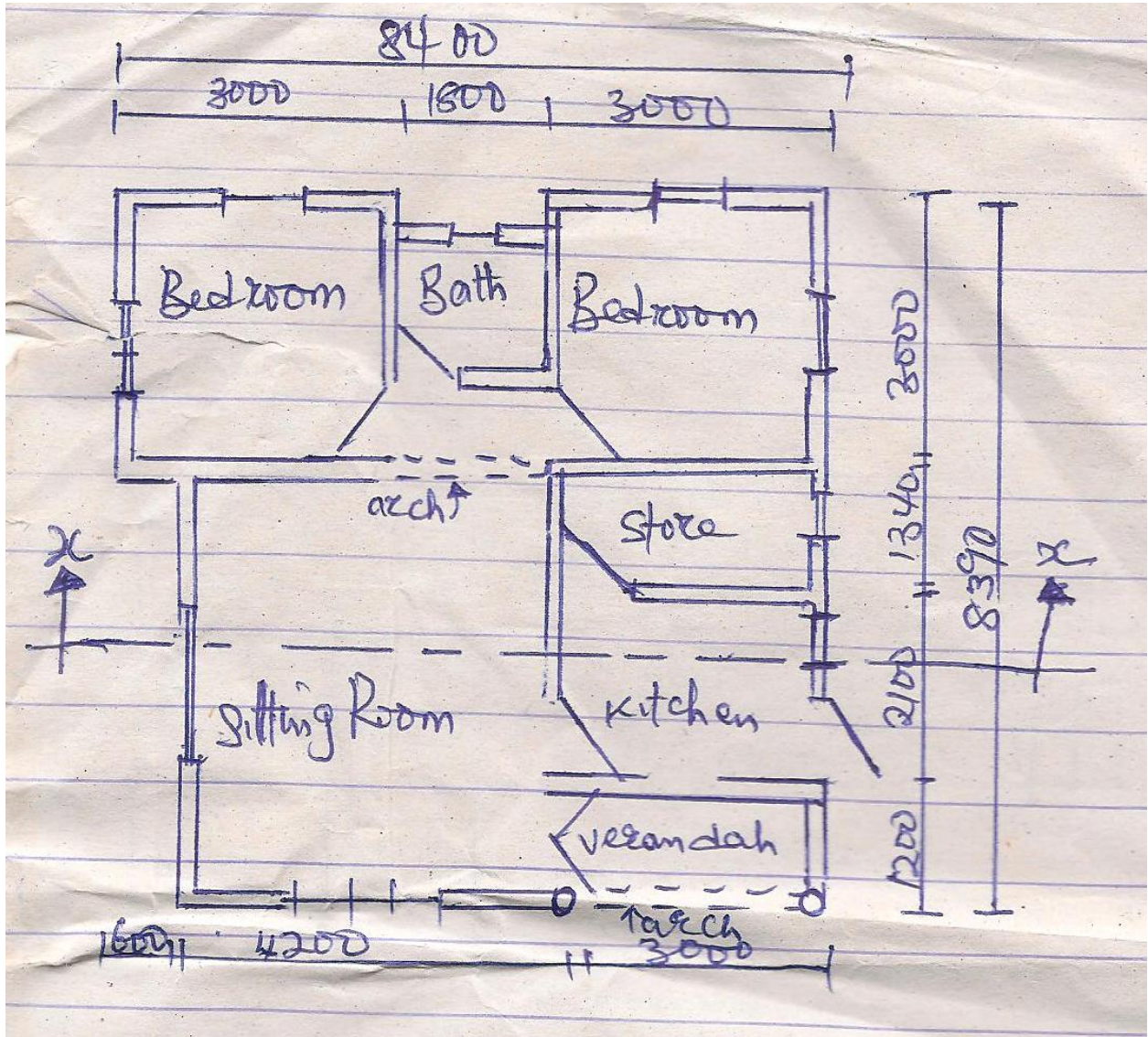




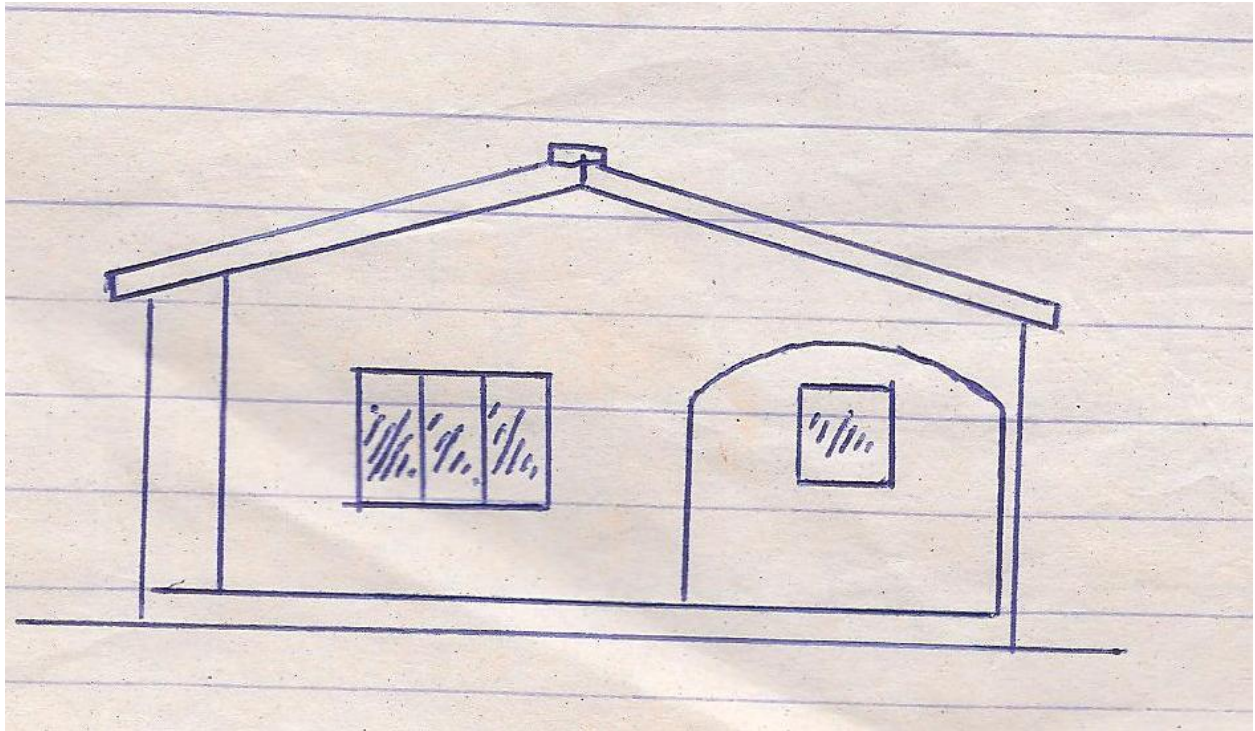
FLOOR PLAN

ANSWER

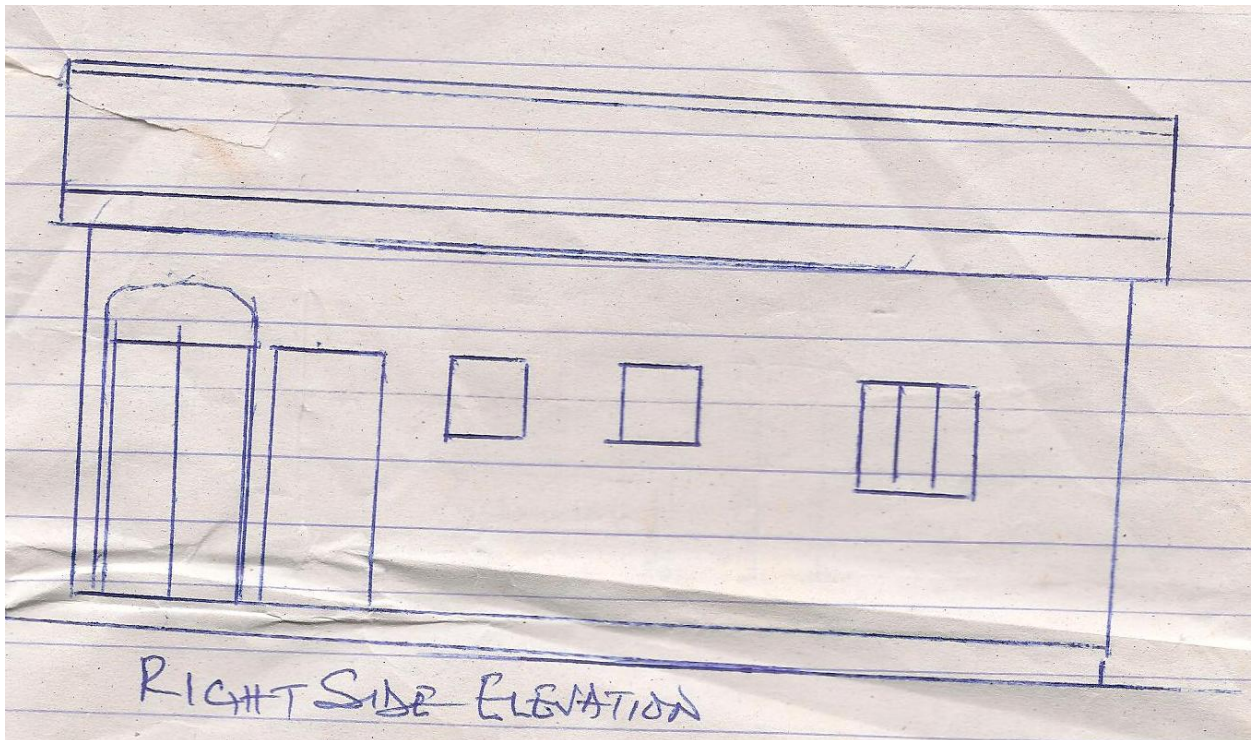
5a.



b.



c.



d.

