CERTIFICATE EXAMINATIONS FOR DAY VOCATIONAL COURSES, 1965.

MECHANICAL DRAWING.

THURSDAY, 24th JUNE – 10 a.m. to 12.30 p.m.

INSTRUCTIONS

(a) Not more than <u>four</u> questions may be attempted; <u>two</u> of these must be selected from Section I and <u>two</u> selected from Section II.

(b) The number of the question must be distinctly marked by the side of each answer.

(c) Work on one side of the paper only.

(d) All questions carry equal marks; a maximum of 5 marks will be awarded for accuracy and neatness of arrangement in respect of each question.

(e) Examination number must be distinctly marked on each sheet of paper used.

SECTION I

(Answer either 1 (A) or 1 (B), and any <u>one</u> other question from this Section.)

1 (A). The drawing at Fig. 1A represents a woodwork joint. Make a full size drawing of the assembled joint showing:-

    (a) an elevation looking in the direction of arrow X,
    (b) an end elevation looking in the direction of arrow Y,
    (c) a plan view projected from (a).

    All dimensions required for making the joint should be shown on the completed drawing.

1 (B). The drawing at Fig. 1B represents a metalwork project.
    Draw free-hand on the $\frac{1}{8}$" squared paper supplied, the following views of the project in good proportion and correct projection:-

    (a) an elevation,
    (b) an end elevation,
    (c) a plan projected from (a).

    Show by means of properly drawn dimension lines the number of dimensions you would require in order to make the project.
    (It is not necessary to give actual dimensions.)

2. The elevation and the side elevation of a bookend are shown in Fig. 2.
    Draw full size an ISOMETRIC <u>or</u> OBLIQUE projection of the bookend.

3. The elevation and plan of a rectangular based solid, shaped to the dimensions indicated, are shown in Fig. 3.

    (a) Reproduce full size this elevation and plan.
    (b) Draw an auxiliary elevation of this solid on the new ground line X' Y'.
    The auxiliary elevation is to be projected from the plan looking in the direction of the arrow F.
    The new ground line X' Y' is drawn at right angles to the arrow F.
    Indexing of the corners has been omitted.
    Candidates attempting this question must adopt their own form of indexing.

4. The elevation of a regular hexagonal based prism is shown in Fig. 4.
    The prism is cut by an inclined plane as indicated by the dimensions on the elevation.

    Draw full size:-

    (a) the plan and elevation of this sectioned prism,
    (b) the surface development of the prism as sectioned, including the base but omitting the development of the sloped top.
    Index correctly each corner on the development.

SECTION II

(Answer any <u>two</u> questions from this section)

5. Three Gothic arches are shown in Fig. 5.
    The spans R1, R2 and R3, are in the ratio of $1\frac{1}{2}$: $2\frac{1}{2}$: $1\frac{1}{2}$ respectively.
    Using the proportional division of a line, reproduce Fig. 5 so that the arches have a total span of 7 inches as indicated. Construction lines must be clearly but lightly shown.

6. Construct a scale of $1\frac{1}{4}$ inches representing one foot, to read up to six feet.
    Using this scale draw the cross shown in Fig. 6, to the dimensions given.
    Candidates attempting this question <u>must</u> use the scale constructed, otherwise they will be severely penalized.

7. Two circles of $\frac{7}{8}$ inches and $\frac{1}{2}$ inch radius respectively are to be drawn as shown in Fig. 7. Find geometrically the centre of the circle that will touch and, without cutting, enclose the two circles as indicated.
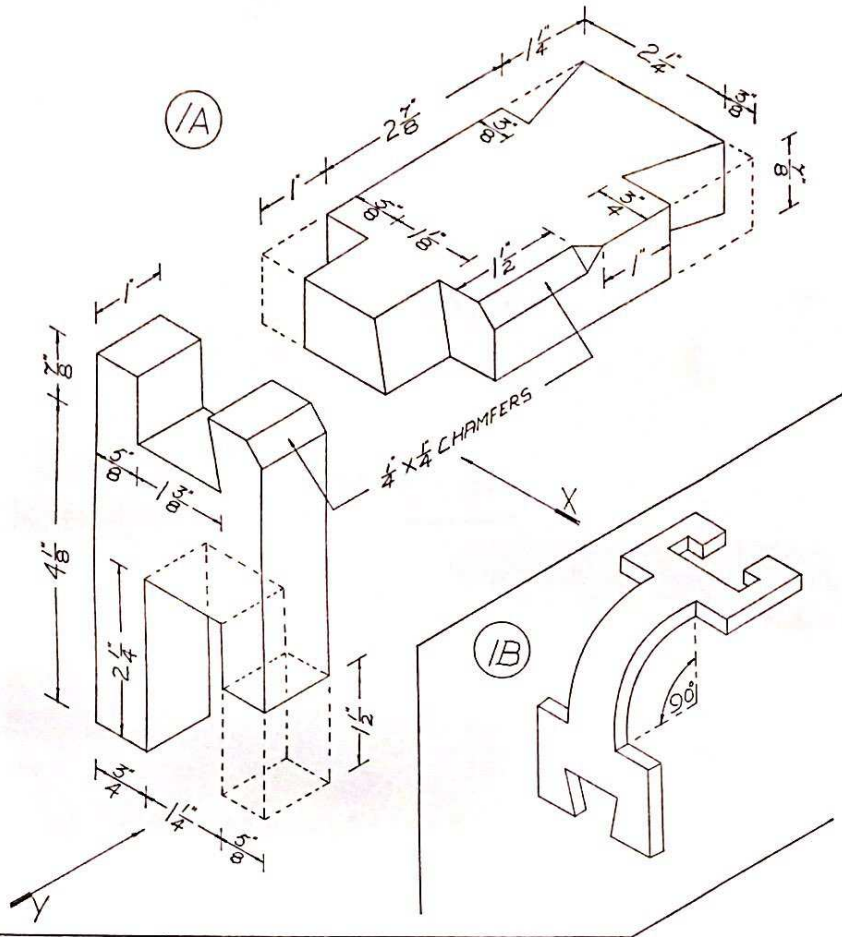   The radius of the enclosing circle is to be $2\frac{3}{4}$ inches.
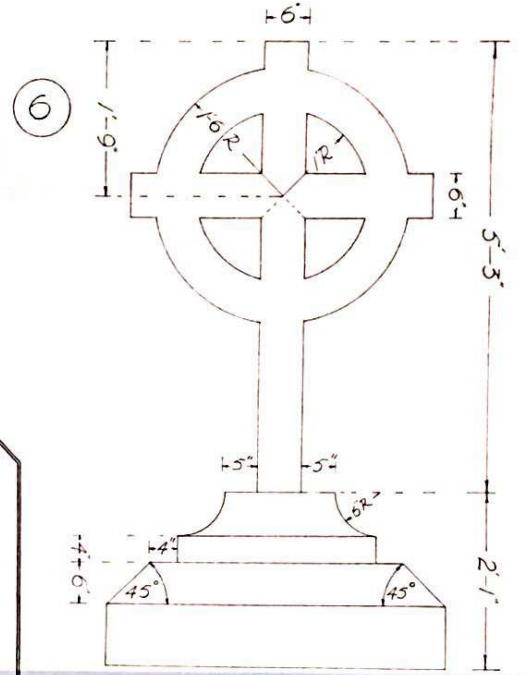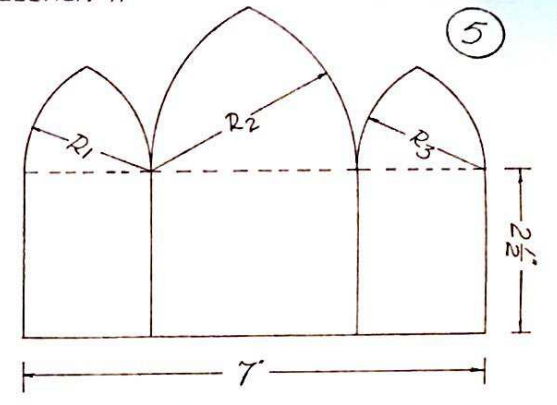   The exact location of points of contacts of the touching circles must be clearly shown.

8. The base of the equilateral triangle shown in Fig. 8, is inclined so that its altitude AD, which measures $5\frac{1}{2}$ inches, makes an angle of 70 degrees with the XY line as shown.
    (a) Construct geometrically the triangle to the given data.
    (b) Determine the largest circular disc that may be cut from this triangle.
    (c) Measure and write down the diameter of this disc.

SECTION I.

1A

1B

4" × 5/4" CHAMFERS

X

Y

2

5 3/4"
3 3/4"
1/2 R
45°   45°
1/2"
5/8"

3

2"
3/4"
2"
3"
30°   F
X   Y
X'   Y'

4

3"
2 1/4"
a' b' c' d'
g' h' i' j'

SECTION II

5

R1   R2   R3
7"
2 1/2"

6

6"
1'-6"
2" R   R
5"   5"
1'-6"   5'-3"
2'-1"
4"   45°   6 R   45°
4'-6"

CANDIDATES ATTEMPTING THIS QUESTION MUST
USE THE SCALE CONSTRUCTED, OTHERWISE
THEY WILL BE SEVERELY PENALIZED.

7

7/8 R
30°
1/2 R
2 3/4 R
2 1/2"

8

a
b
d
c
X   Y