NCCA
National Council for Curriculum and Assessment
An Chomhairle Náisiúnta Curaclaim agus Measúnachta

Leaving Certificate Design and Communication Graphics

DRAFT

Sample questions

Ordinary Level

Structure of the examination paper

Recommended total marks: 240 marks

Recommended duration of examination: 3 hours

Section A [60 marks]

Candidates will be expected to answer any four questions in this section (15 marks per question).

Section B [90 marks]

Candidates will be expected to answer any two questions in this section (45 marks per question).

Section C [90 marks]

Candidates will be expected to answer any two questions in this section (45 marks per question).

Instructions to candidates

(a) *Construction lines must be clearly shown for all questions.*

(b) *Write the number of the question distinctly on the answer paper.*

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

(d) *All dimensions on the question paper are given in metres and millimetres.*

(e) *First or third angle projection may be used.*

Core

Section A

Answer any **4** Questions from this section

Question 1

The Plan, Elevation and End Elevation of a building are shown in **Fig. 1**. Project an auxiliary view of the building, which will include the true shape of the shaded surface.

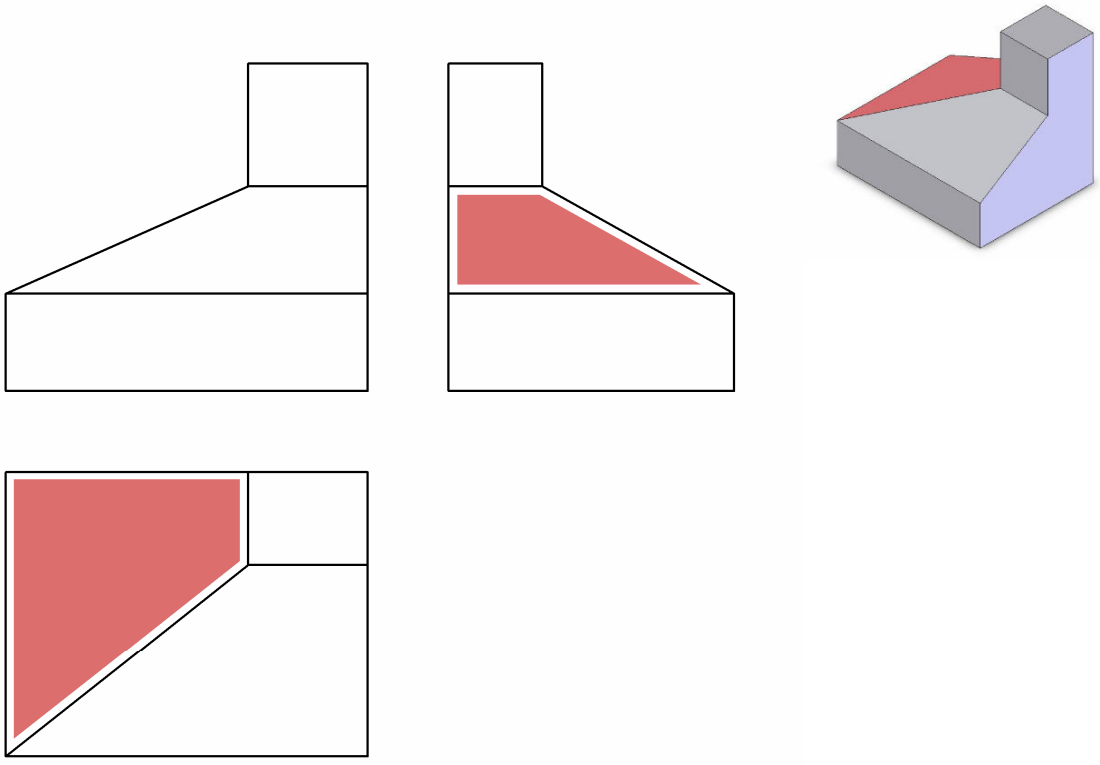
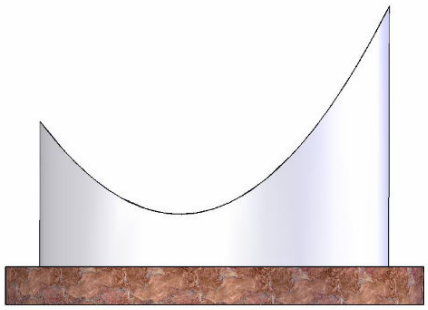
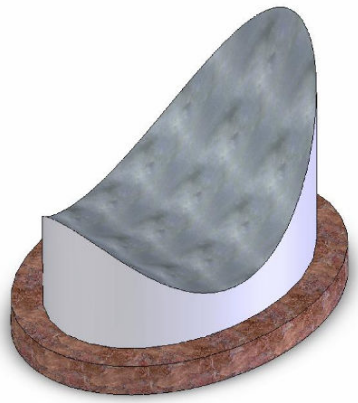


Fig. 1

Question 2

Fig. 2 shows the incomplete end elevation of a trophy. The complete end elevation and pictorial view of the trophy are also shown. The curve joining points A and B is a **Parabola** that has CD as its directrix. Locate the focus and draw the Parabola between A and B.





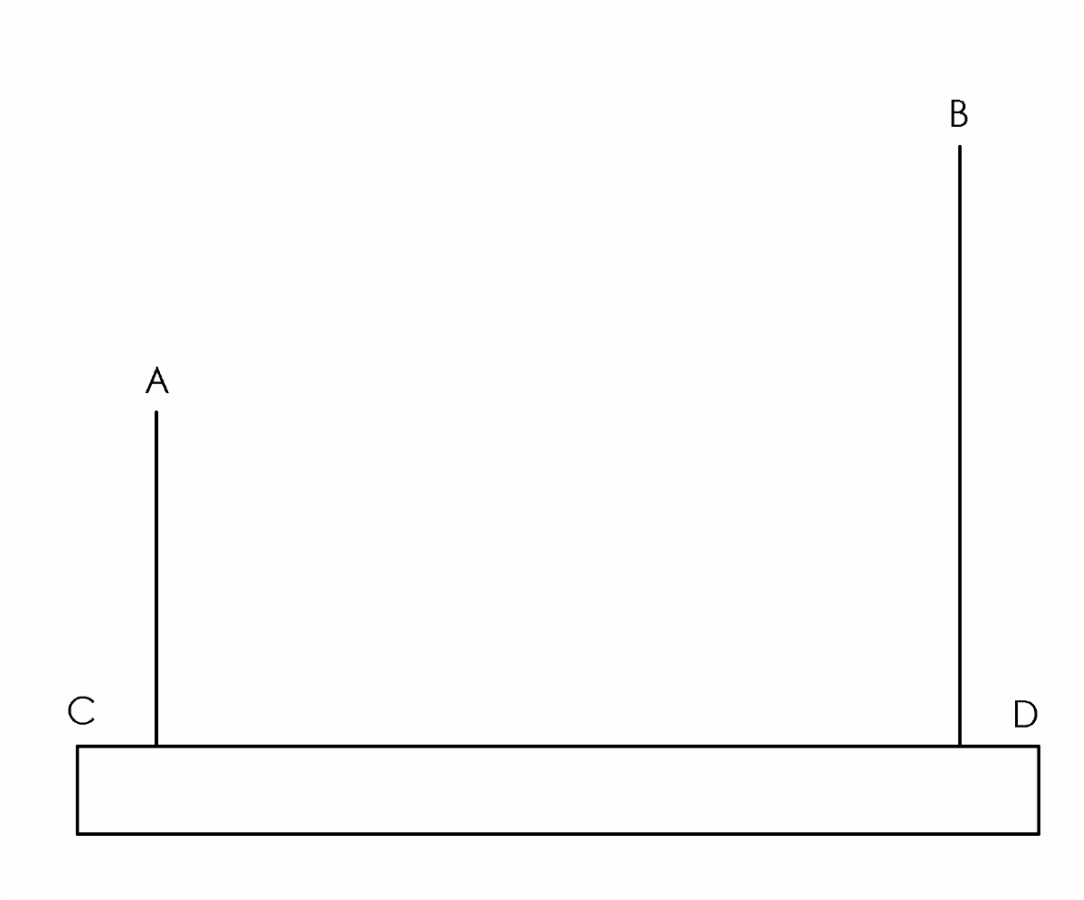


Fig. 2

Question 3

The Plan and Elevation of a monument is shown in **Fig.3**. The outline of the base is shown in isometric **Fig. 3(a),** complete the isometric drawing of the block.

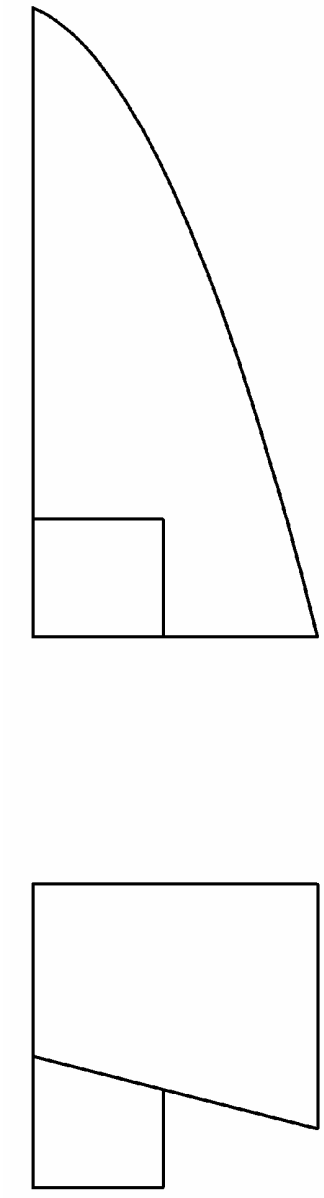


Fig. 3

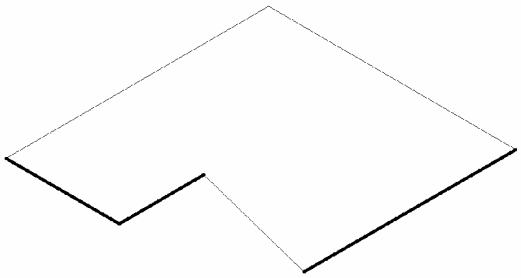
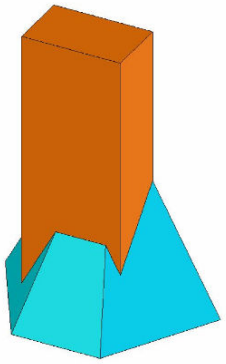


Fig. 3(a)

Question 4

The Plan and incomplete Elevation and End Elevation of a canopy with a rectangular chimney are shown in
Fig. 4. Complete the Elevation and End elevation showing all lines of intersection.



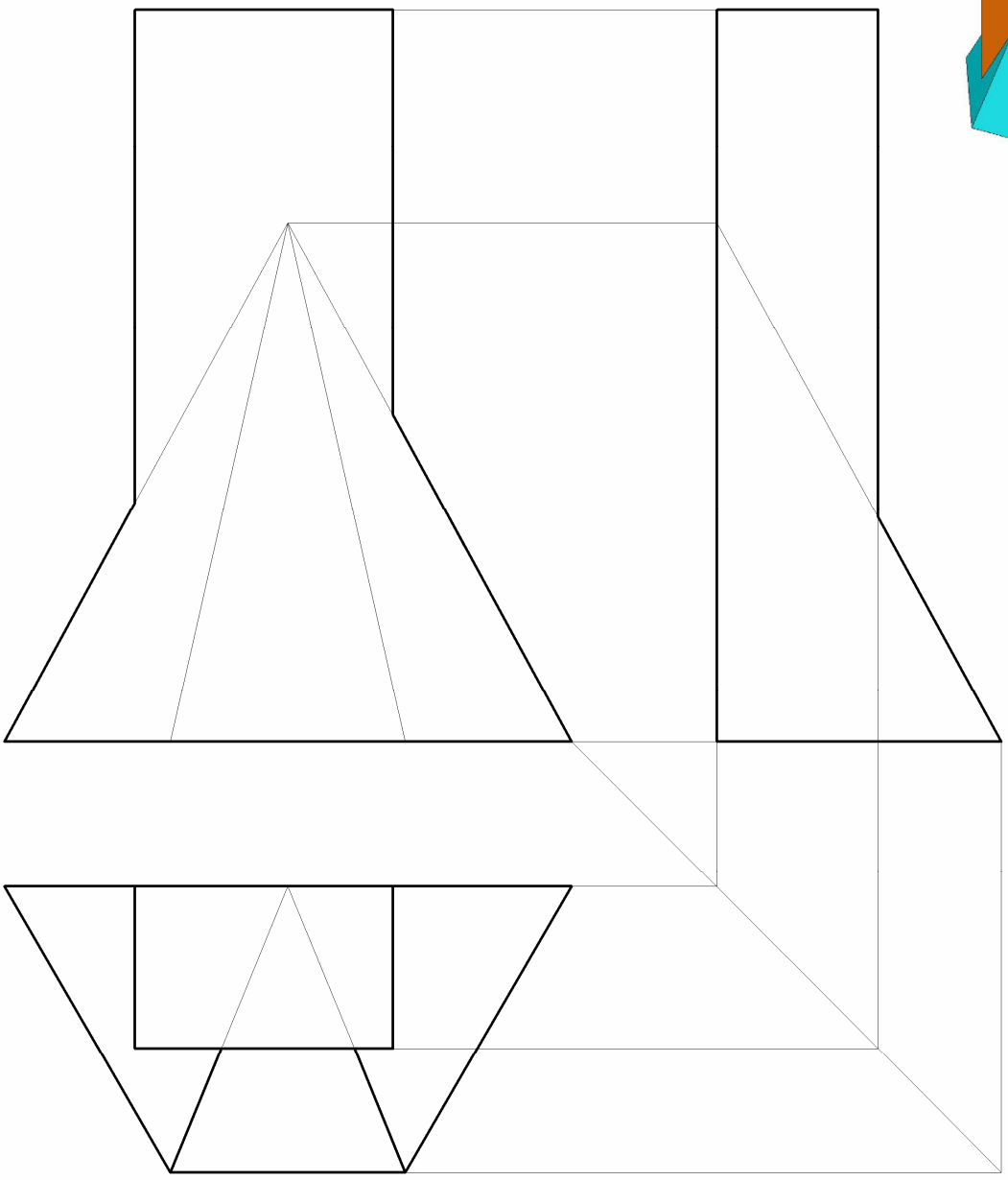
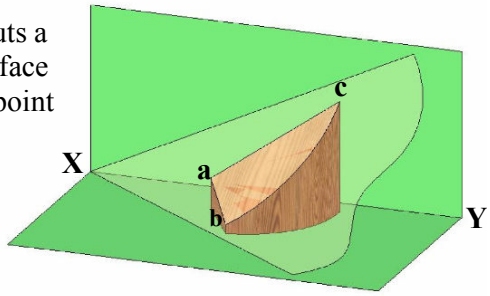


Fig.4

Question 5

Fig. 5 shows the horizontal trace of an oblique plane, which cuts a fire log as shown in the pictorial view. The plan of the cut surface on the oblique plane is also shown. A_1 is the elevation of the point A on the cut surface.

(a) Determine the location of the vertical trace.
(b) Complete the elevation of the cut solid.



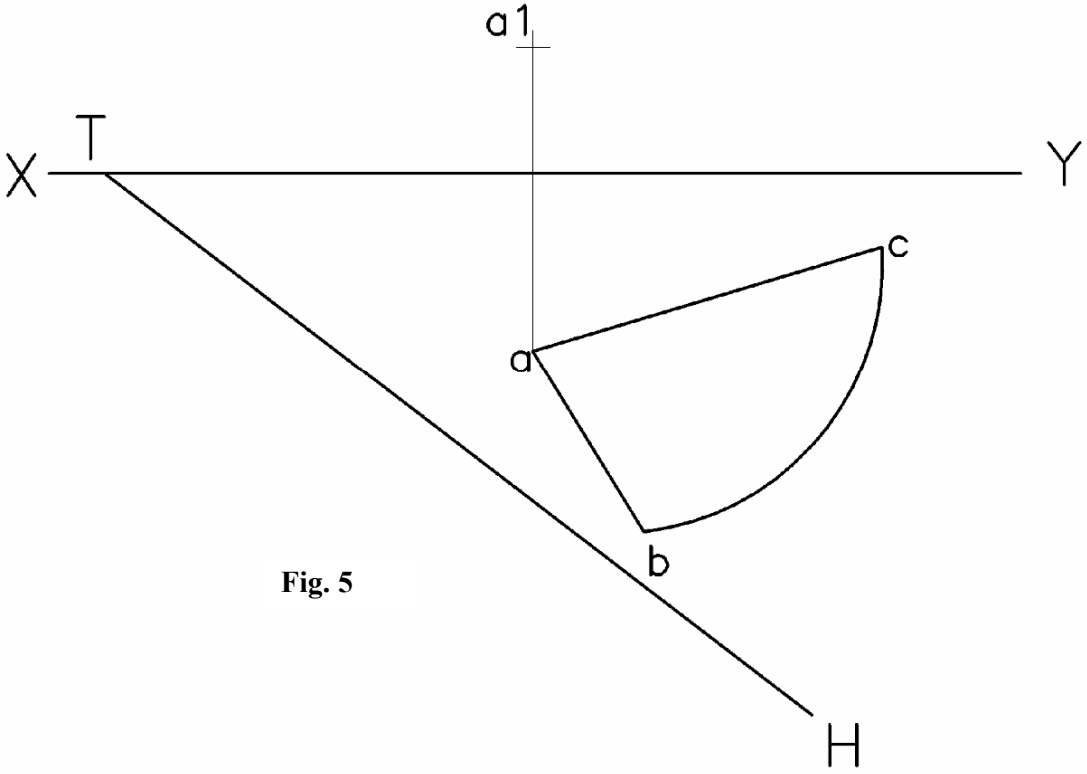


Fig. 5

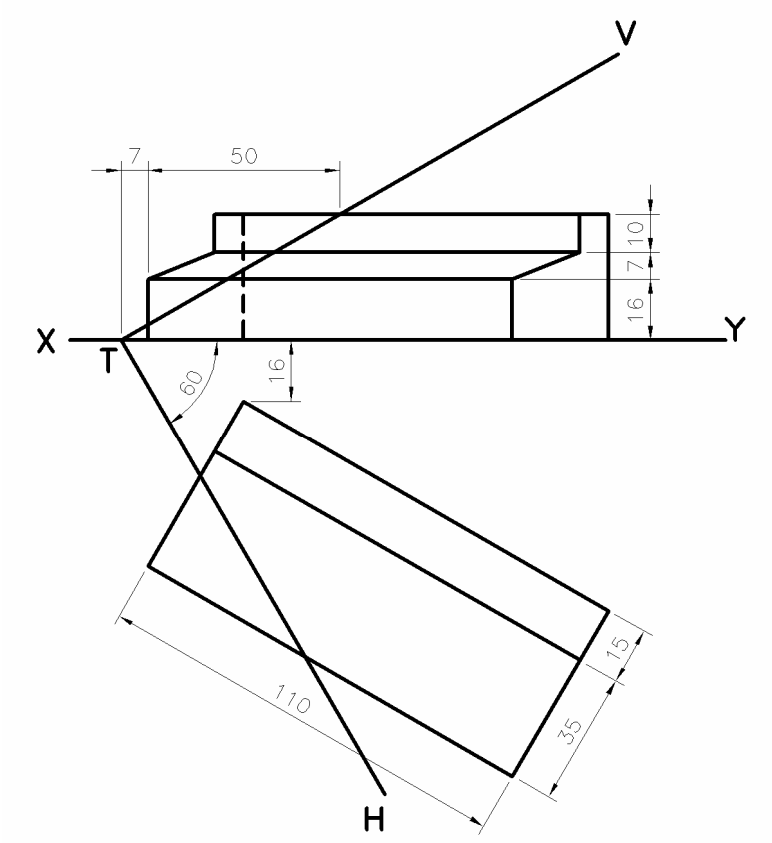
SECTION B

Answer any **2** Questions from this section

Question 6

The incomplete plan and elevation of a window cill which is to be cut by the oblique plane VTH are shown in **Fig. 6.**

a) Complete the plan and elevation of the cut solid
b) Measure and state the true inclination between the oblique plane and the horizontal plane.



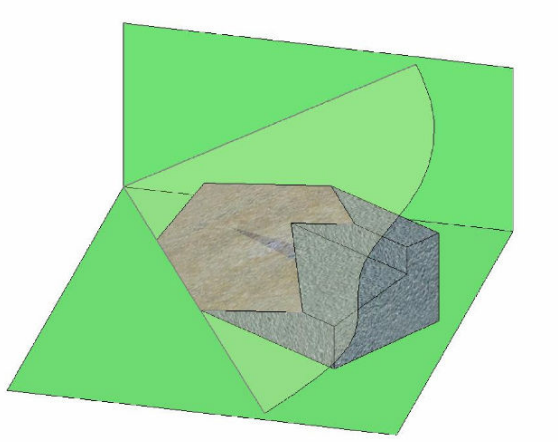
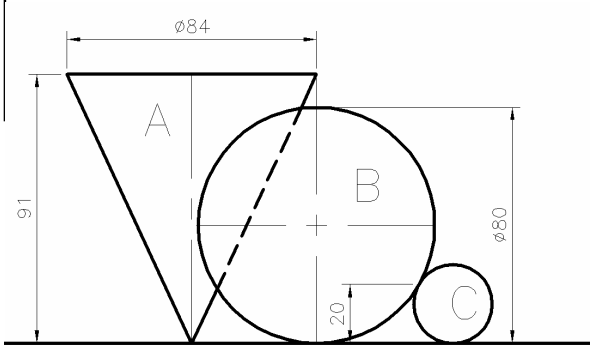
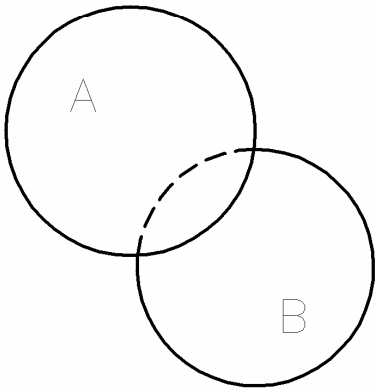
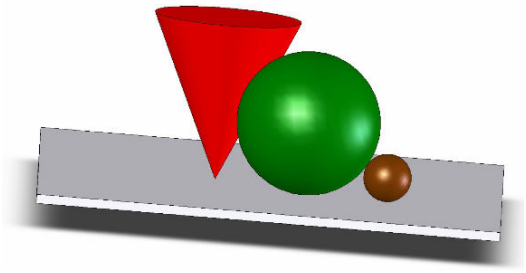


Fig.6

Question 7







The elevation and plan of Cone A, Sphere B in contact are shown in **Fig. 7**, the elevation of a Sphere C, which is in contact with sphere B at a point 20mm above the Horizontal plan, is also shown.

a) Draw the elevation and complete the plan of the three solids.

b) Determine the point of contact between Cone A and Sphere B in plan and elevation.

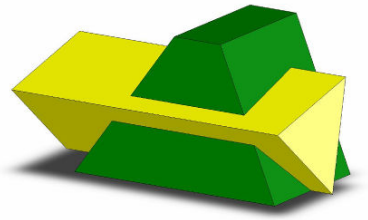
Fig 7.

Question 8

Fig. 8 shows the end elevation and incomplete plan and elevation of two solids, one of which is a equilateral triangular prism side 57mm, that intersect each other.

a) Draw the end elevation and complete the plan and elevation showing all lines of intersection.

b) Develop the cut surface A.



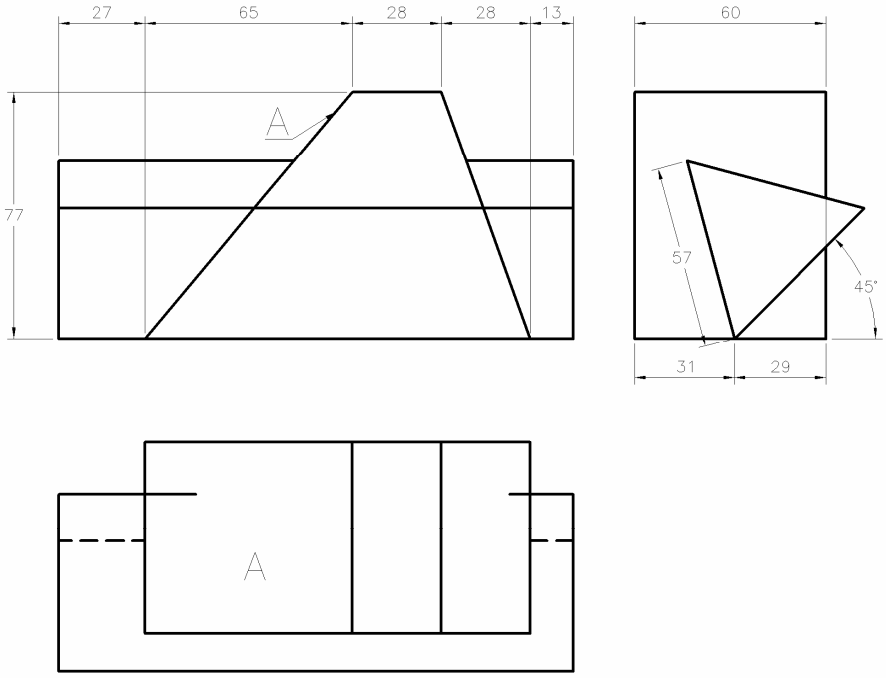


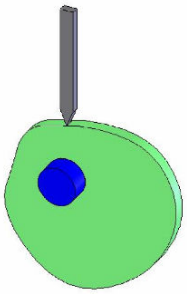
Fig.8.

SECTION C

Applied Graphics

Answer Any **2** Questions from this section

Question 9

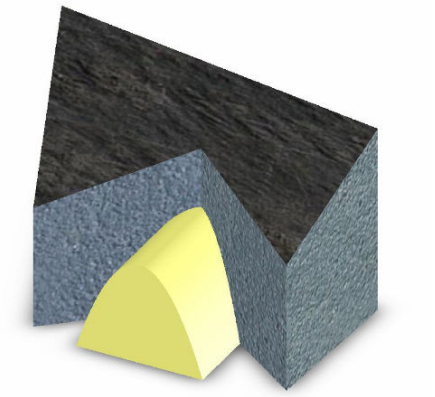


(a) Constuct the plan and elevation of a cylindrical helix which turns one complete revolution moving from the top to the bottom of a cylinder which has a diameter of 80mm and a height of 90mm

(b) Plot the cam profile and displacement diagram for a plate cam, rotating in an anti-clockwise direction. The cam imparts the following motion during one revolution.

¼ revolution dwell.
¼ revolution rise 30 mm with simple uniform velocity.
¼ revolution dwell.
¼ revolution fall 30mm with simple harmonic motion.

Question 10



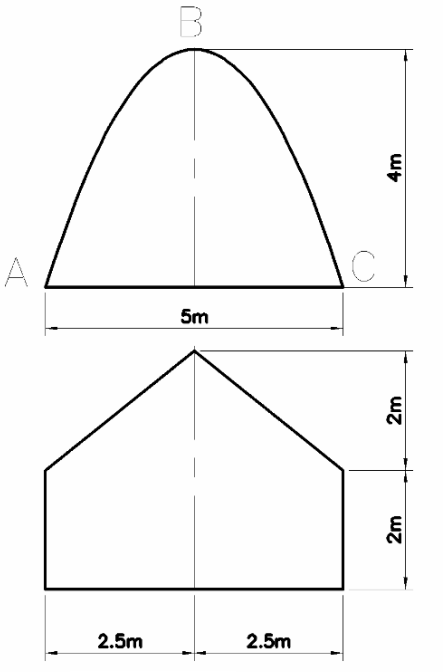


Fig.10(a)

(a) The plan and elevation of an entrance to a buiding are shown in **fig. 10(a),** the curve ABC is a parabola in elevation.
Draw the plan and elevation and complete an end elevation.

Scale 1:100

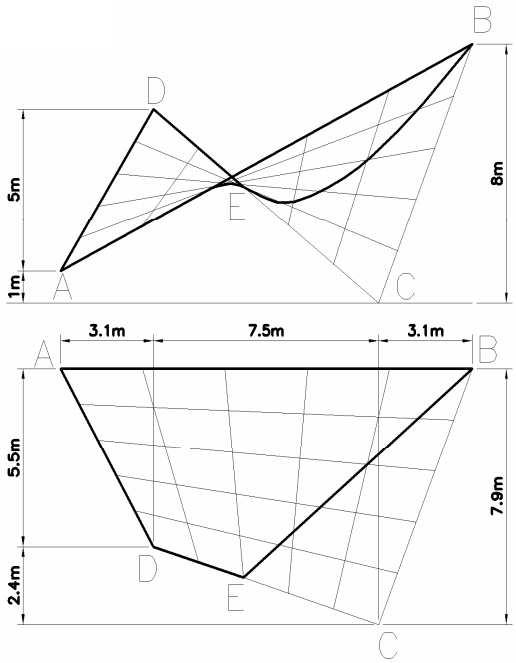


Fig.10(b)

(b) The plan and elevation of a shell structure in the form of a Hyperbolic paraboloid shell roof are shown in **fig.10(b).** The roof has been sectioned resulting in the curve BE.
Draw the given plan and elevation

Scale 1:100

Question 11

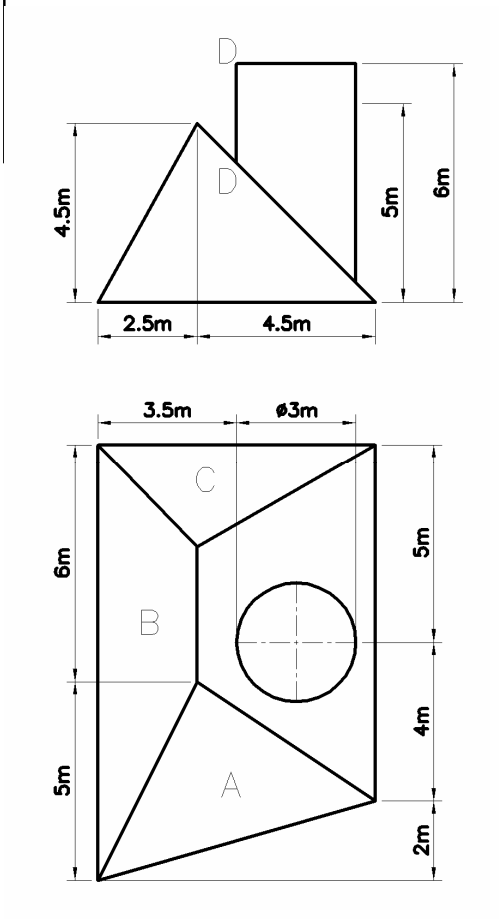


Fig.11

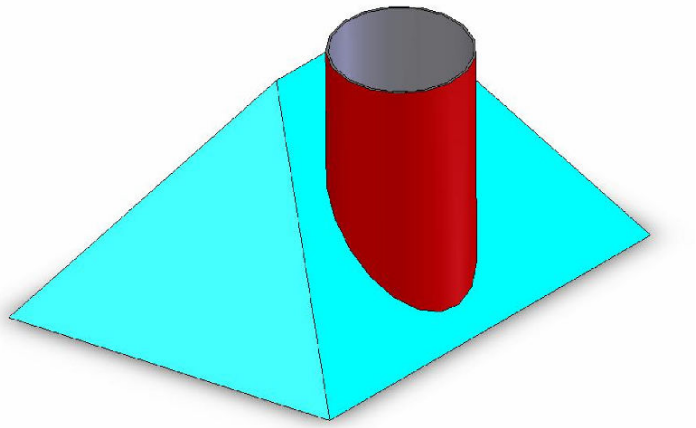
Fig.11 shows the plan and elevation of a roof structure with a cylindrical chimney pipe.
Surface C has a pitch of 60°.

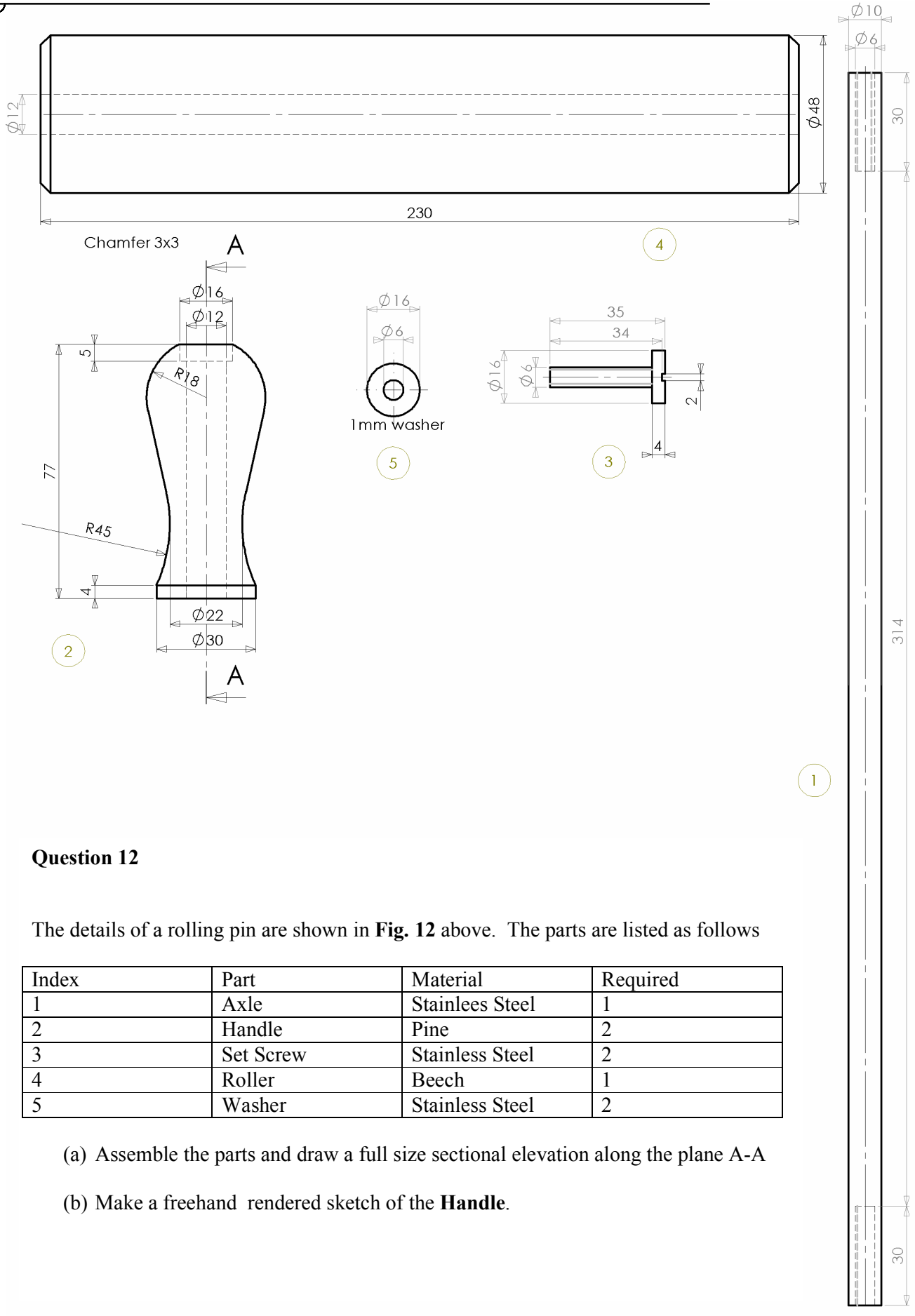
(a) Draw the given plan and elevation

(b) (i) Develop the curved surface of the pipe with DD as the seam line.

(ii) Determine the dihedral angle between the surfaces A and B.

Scale 1:100





Question 12

The details of a rolling pin are shown in **Fig. 12** above. The parts are listed as follows

Index	Part	Material	Required
1	Axle	Stainlees Steel	1
2	Handle	Pine	2
3	Set Screw	Stainless Steel	2
4	Roller	Beech	1
5	Washer	Stainless Steel	2

(a) Assemble the parts and draw a full size sectional elevation along the plane A-A

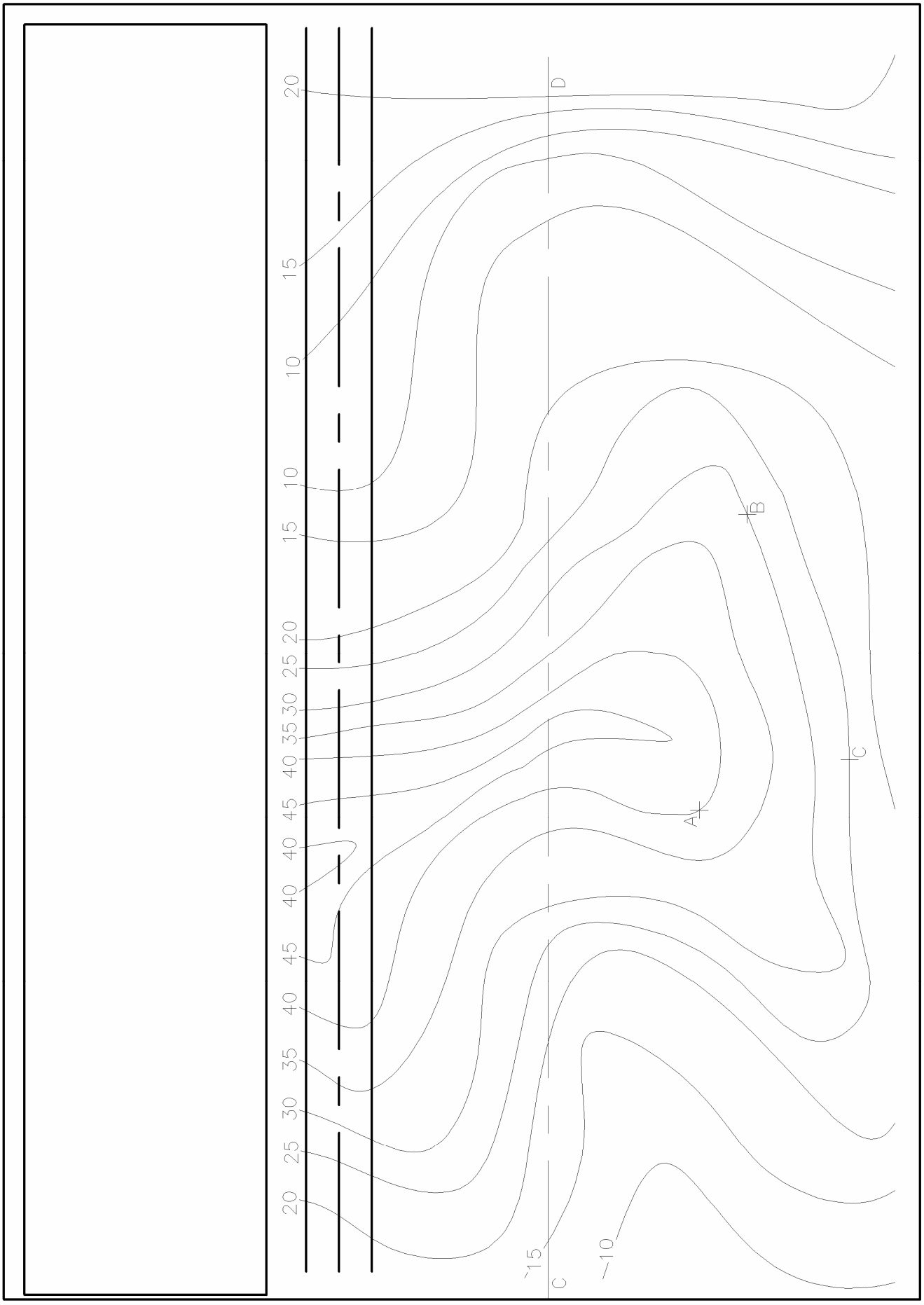
(b) Make a freehand rendered sketch of the **Handle**.

Question 13

The accompanying drawing shows ground contours at 5m vertical intervals. CD is the centreline for a proposed roadway. The roadway has the following specification.

Formation Level at C and D.	25m
Formation width is as shown.	
Side slopes for cuttings	1:1
Side slopes for embankments	1:1.5

(a) On the drawing supplied draw a vertical profile (section) on the line CD.
(b) On the drawing supplied show the earthworks necessary to accomodate the proposed roadway.
(c) AB and C are outcrop points for a statum of ore. Determine the dip and strike for the ore.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