GENERAL INSTRUCTIONS

1. Border line should be placed on drawing sheet at 50 mm for left side and for all other side at 20 mm away from respective edges.
2. Use HB pencil for drawing the border lines.
3. Provide title block at the right bottom corner.
4. Title block should be drawn before of any work on drawing sheet
5. Dimensions of arrow head should be in the ratio of 1(Width):3(Length) and drawn in "HB" pencil
6. The required lines like true lines. XY lines , and visible lines should be drawn with "HB"
7. Lines like true line, projection line, hatching line should be drawn with "2H" pencil and lines like hidden lines, invisible lines should be dash line.
8. Other lines are shown below.

   _____ _ _____ _ _____ CENTER LINE (2H PENCIL)

   _____ _ _____ _ _____ CUTTING PLANE LINES (2H AND H PENCIL)

    LONG BREAK LINE (2H PENCIL)

9. Marking of any points (A), which are on top view mentioned as small alphabet like 'a' and on front view as small alphabet with superscript dash a".
10. Unit of all dimensions should be mentioned just after the dimensions. If all the dimensions have same unit , say millimeter, mention like "ALL DIMENSIONS ARE IN MM" at left of bottom of title block without mentioning unit near the dimensions.
11. Dimensions of vertical lines and horizontal lines should be mentioned right and bottom sides at a distance not less than 5 mm. Dimensions of inclined lines should be mentioned parallel to its lines at a distance not less than 5 mm.

WORK SHEET NO.1 FM:10

LETTERING

Instructions

Types of letters

1-Single stroke letter

2- Gothic letter

1. Spacing between two letters should be approximately equal to 1/5 of height of letter and space between words should be approximately 3/5 of height of letter.
2. Lettering should be in plain and simple style so that it can be done freehand with speed. The ratio of height to width for letters should be approximately 6/5
3. The height of letters of any word in side the drawing sheet except in title block should be more than 5 mm , and all should be in black letter in H.B. pencil in single stroke

QUESTIONS

1. Write '0' to '9' in 10 mm height.
2. Write ENGINEERING DRAWING IS THE LANGUAGGE OF ENGINEERS
   (Use single stroke vertical lower and upper case letters of height 12 mm
3. Write "A QUICK BROWN FOX JUMPS OVER THE LAZY DOG"
   (Single stroke vertical capital letters of height 12 mm)

WORK SHEET NO.2 FM:10

PROJECTION OF POINTS

Q.1. Draw the projections of the points as follows and state its position with respect to reference planes:

(a) Top view on xy, line and front view 40 mm above xy line.

(b)Top view on xy line and front view 25 mm below xy line

(c) Top view and front view both on xy line.

(d) Top view 40 mm above xy, line and front view 30 mm below xy line

(e) Top view 30 mm below xy line and front view 45 mm above xy line

(f) Top view 25 mm below xy, line and front view 40 mm below xy line

Q.2. Draw the projections of the following points on the same ground line keeping the projectors 50 mm apart. The point is

(a) 40 mm below the H.P and 30 mm behind the V.P

(b) 25mm above the H.P and 35 mm behind the V.P

(c) In the H.P and 30 mm behind the V.P

(d) In the H.P and 40mm in front of V.P

(e)35 mm above the H.P and in the V.P

(f) In the H.P and in the V.P.

WORK SHEET NO.3 FM:10

PROJECTION OF LINES

Q.1. Draw the projections of a 70 mm long straight line AB, when it is

(a) parallel to and 25 mm above the H.P and lying in the V.P
(b) perpendicular to the H.P, 25 mm behind the V.P and its one end 10 mm above the H.P
(c) perpendicular to the V.P in the H.P and its one end in the V.P
(d) inclined at 35^0 to the H.P with one end 20 mm above it, and parallel to and 25 mm in front of the V.P

Q.2. A line CD 30 mm long is parallel to both the planes(V.P and H.P).The line is 40 mm above the

H.P. and 25 mm in front of V.P. Draw its Projections

Q.3. Draw the projection of a straight in line CD 50 mm long, parallel to the H.P. and inclined to V.P. The end C is 10 mm in front of V.P. and D is 30 mm in front of V.P. and the line is 15 mm above H.P.

Q.4. A line EF 40 mm long is in the V.P. and inclined to H.P. The top view measures 30 mm . the end E is 10 mm above the H.P. Draw the projections of the line & determines its inclination with H.P.

WORK SHEET NO.4 FM:10

LINE INCLINED TO BOTH THE PLANES

Q.1. A line CD 80 mm long is inclined at an angle 30^0 to H.P. and 45^0 to V.P. The point C is 20 mm above H.P. and 30 mm in front of V.P. Draw the projections of the straight line.

Q.2. A line measuring 75 mm long has one of its ends 50 mm in front of V.P. and 15 mm above H.P. The top view of the line is 50 long and in front of V.P. The other end of the line is 15mm in front of V.P.

Q.3. Draw the projections of a line AB , 100 mm long, when one of its ends is touching the V.P. and the other end touching the H.P. The angle of inclination with H.P. and V.P. are 40^0 and 50^0 respectively.

Q.4. A line LM 70 mm long, has its end L 10 mm above H.P. and 15 mm in front of V.P. Its top view and front view measure 60 mm and 40 mm respectively. Draw the projections of the line and determine its inclinations with H.P. and V.P.

WORK SHEET NO.5 FM:10

PROJECTION OF PLANES

Q.1. A pentagonal plane ABCDE of 30 mm side is parallel to and 10 mm above H.P. Its one side is parallel to and in front of V.P. The corner opposite to this side is 70 mm in front of V.P. Draw the projections of the plane.

Q.2. A rectangular plane ABCD of 50 mm×20 mm has its plane perpendicular to V.P. and inclined at 30^0 to H.P. Its corner 'A' is 20 mm above the H.P. and 15 mm in front of V.P. Draw the projections of the plane when the longer side is parallel to the V.P.

Q.3. A hexagonal plane ABCDEF of 25 mm side has its plane perpendicular to H.P. and inclined at 30^0 V.P. Its one side is parallel to and 10 mm above of H.P. and 15 mm in front of V.P. Draw the projections.

Q.4. Draw the projections of a circular plane of 50 mm diameter having its plane vertical & inclined at 30^0 to the V.P. Its center is 30 mm above the H.P and 30mm in front of the V.P.

WORK SHEET NO.6 FM:10

PROJECTION OF SOLIDS

Q.1. Draw the projections of a cylinder of base 40 mm diameter and axis 50 mm long resting on its base on H.P. and axis 25 mm in front of V.P.

Q.2. Draw the projections of a right circular cone of base 40 mm diameter & height 60 mm long when one point on circumference of base is touching V.P. Axis is 25 mm above and parallel H.P. and inclined to V.P at 45^0

Q.3. Draw the projection of a regular pentagonal prism side of base side 30 mm and axis 60 mm long, resting with its base on V.P. such that one of its rectangular face is parallel to & 10 mm above H.P.

Q.4. A regular hexagonal prism of base 25 mm side and axis 60 mm long is resting on one of its corner of the base on H.P. The axis of the solid is inclined at 45^0 to the H.P.

WORK SHEET NO.7 FM:10

SECTION OF SOLIDS

Q.1. A pentagonal pyramid, side of base 30 mm and axis 60 mm long, rests with it's base on H.P. and one of the edges of its base is perpendicular to V.P. it is cut by a section plane perpendicular to V.P. and parallel to H.P. and cutting the axis at a point 35 mm above the base. Draw the front and sectional top view of truncated pyramid.

Q.2. A Right circular cone with diameter of base 50 mm and axis 60 mm long is resting on its base on H.P. It is cut by section plane inclined at a 45^0 to H.P. and passing through the axis at a point 35 mm above H.P. Draw the projections of the cut solid.

Q.3. A cylinder having base diameter 45 mm and height 55 mm is resting on H.P. on its base. A section plane perpendicular to H.P. and inclined to V.P. at 45^0 cuts it 10 mm away from the axis. Draw the sectional elevation & plane.

Q.4. A hexagonal pyramid side of base 25 mm and axis 55 mm long, rests with its base on H.P. , such that one of the edge of its base perpendicular to V.P. It is cut by a section plane perpendicular to H.P. inclined at 45^0 to V.P. and passing through the pyramid at a distance of 10 mm from the axis. Draw the sectional font view and true shape of the section.

WORK SHEET NO.8 FM:10

DEVELOPMENT OF SURFACES

Q.1. Draw the development of the lateral surface, of a square pyramid, side of base 25 mm & height 50 mm, resting with it's base on H.P. and an edge of the base parallel to V.P.

Q.2. A cylinder of diameter of base 40 mm and axis 55 mm long is resting on its base on H.P. It is cut by a section plane perpendicular to V.P. & inclined at 45^0 to H.P. The section plane is passing through the top end of an extreme generator of the cylinder. Draw the development of the lateral surface of the truncated cylinder.

Q.3. A hexagonal prism, edge of base 20 mm & axis 50 mm long, rests on its base on H.P. , such that one of its rectangular faces is parallel to V.P. it is cut by a section plane perpendicular to V.P. inclined at 45^0 to H.P. & passing through the right side corner of the top face of the prism. Develop the lateral surface of the truncated prism.

Q.4. A cone of base 40 mm diameter and slant height 60mm rests with its base on V.P. A section plane perpendicular to H.P. and inclined at 30^0 to V.P. bisects the axis of the cone. Draw the development of the e lateral surface of the truncated cone.