

B.E. Production Engineering 2nd Year, 1st Semester Examination, 2023

SUBJECT: PROJECTION AND SPATIAL GRAPHICS

Time : Three hours

Full Marks 100

Answer any Four questions from Group-A, and Two questions from Group-B.
(Draw the Diagram Neatly with proper geometric construction method and Dimension them Properly)

Group-A

1. A right regular hexagonal pyramid (draw with proper geometric construction method only), 15
 side of base 25mm and height 55mm, rests on its base on HP with one of its sides parallel to VP. A section plane perpendicular to the HP and inclined to the VP at 45° cuts the pyramid and passes at a distance of 10mm from its axis. Draw its top view, sectional front view and true shape of the section (in 1st angle projection). Also develop the lateral surface of the cut pyramid.
2. Find out **GRAPHICALLY** the true length of line AB [A(20,-20,40) and B(60,15,-40)] and the 15
 true angle made between horizontal and vertical planes with the help of Rotation Method.
3. Draw the Isometric view with proper dimension of the following object shown in Fig. 1. 15
4. Draw the three orthographic view (Third Angle Projection) of the object shown in Fig.2 taking 15
front view from the arrow side with proper dimension, scale and angle of projection.

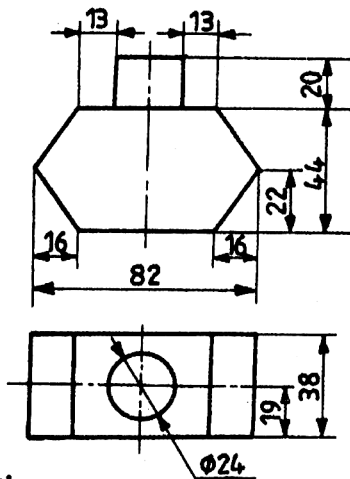


Fig. 1.

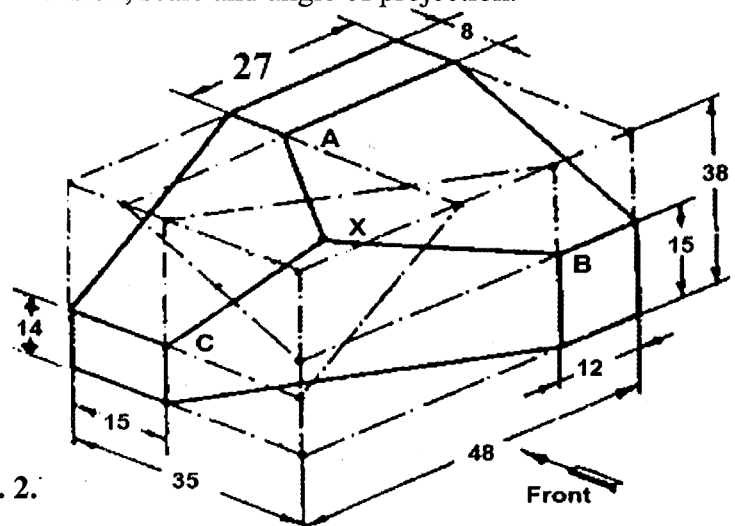


Fig. 2.

5. An area 144cm² on a map represents an area of 36km² on the field. Find the R.F. of the scale for 15
 this map and draw a **diagonal scale** to show kilometers, hectometers and decimeters and to measure up to 10 kilometers. Indicate on the scale, distance of 8.84km and 1.07km.

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P.T.O.**Group-B**

6. A **right regular PENTAGONAL PYRAMID**, edge of base 30mm and height 60mm, is held on ground plane on one of its base corners, such that its axis is inclined at 45° to HP and 30° to VP. **Draw its projections in third angle.** **20**
- Must draw the right regular pentagon with proper geometric construction method with circum-circle**

OR**20**

A **right circular cone**, base $\phi 56$ mm and height 66 mm, resting on its base on HP, is completely penetrated by a **cylinder** of $\phi 30$ mm. The axis of the cylinder is parallel to both the HP and the VP and intersects the axis of the cone at a distance of 20mm from its base. Draw the projections of the solids showing curves of intersection. Assume any suitable length of the penetrating cylinder.

7. Find out **graphically** the co-ordinate of **point P** which has equi-distance from points **A, B, C**. **20**
- The co-ordinates of A, B and C are :
- A(5, 25, -10), B(40,20,40) and C(60,25,30).**
- Also find out the area of the triangle ABC and true distance AP.**