# B.E. PRODUCTION ENGINEERING SECOND YEAR FIRST SEMESTER
## SUPPLEMENTARY EXAM - 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 **SQUARE PRISM**, edge of base 45mm and height 90mm, resting on its base in HP, with a    **15**
    face inclined at 30° to VP, is completely penetrated by another square prism, edge of base 36mm
    and 100 mm long, having its faces equally inclined to the VP. The axes of the two prisms are
    parallel to the VP and bisect each other at right angles. Draw the projections of the solids
    showing lines of intersection.

2.  Find out **GRAPHICALLY** the true length of line AB [**A(20,-20,40) and B(60,10,-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 scale 1:1, all dimensions and showing angle of projection.
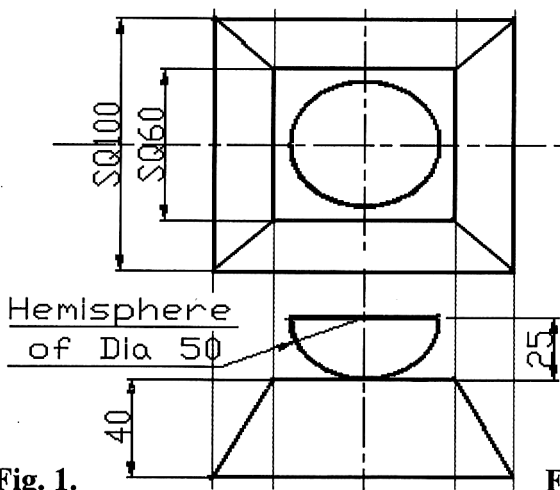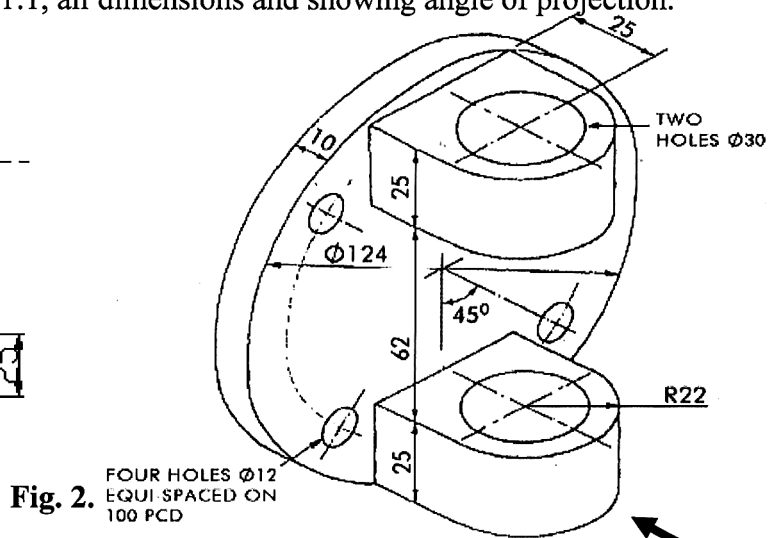


**Fig. 1.**

**Fig. 2.**

5.  An actual distance of 1000 km between two points on a map is shown by a line 25 cm long.    **15**
    Construct the corresponding **forward vernier** scales of kilometers, and also represent the
    distance of 792 km and 495km on the scale.

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## <u>Group-B</u>

6. A **right regular PENTAGONAL PYRAMID (the right regular pentagon must be drawn by proper geometric construction method along with circum-circle)**, side of base 30 mm and length of axis 66mm, is held so that one of its triangular faces is in VP and the base edge contained by the face is inclined at 45° to HP. Draw its front and top views. Assume the pyramid any suitable distance away from the HP.     **20**

## OR

A **right regular pentagonal prism (the right regular pentagon must be drawn by proper geometric construction method along with circum-circle)**, edge of base 30mm and length of axis 65mm, rests on one of its rectangular faces in HP such that its axis is parallel to VP. An auxiliary inclined plane perpendicular to VP and inclined to the HP at 30° cuts the prism bisecting its axis. Draw the front view, sectional top view and the true shape of the section of the cut prism. **Also develop the lateral surface of the cut prism.**     **15+5**

7. Find out **graphically the co-ordinate of point P** which is coplanar with points **A, B, C**. The distance of AP and BP are 50 and 30 respectively. P and C are lying on the same side of the line AB. The co-ordinates of A, B and C are :
**A(5, -25, -10), B(25,20,40) and C(40,25, 30).**
**Also find out the area of the triangle ABC.**     **20**