Form A: *Ref. No.* **Ex/PROD/ES/B/T/214/2024**

B.E. PRODUCTION ENGINEERING
SECOND YEAR FIRST SEMESTER EXAMINATION, 2024
(1ST Semester)
SUBJECT: PROJECTION AND SPATIAL GRAPHICS

Time : Three hours **Full Marks 100**

Answer any *two* questions from **Group-A** and
four question from **Group-B**

Group-A

1. A **right circular cylinder**, diameter of base 60 mm and height 90 mm, is resting on its base on HP. It is intersected by another **cylinder** of 45 mm diameter such that the axes of the two cylinders are mutually perpendicular and are 6 mm apart. Assume the axis of the vertical cylinder to be towards the observe compared to the axis of the horizontal cylinder. Draw the projections of the solids showing curves of intersection. Assume any suitable length of the penetrating cylinder. **20**
   Also develop the Lateral Surface of the penetrating cylinder (dia.45mm).

2. Find out **graphically** the co-ordinate of **point P** of triangle **ABP.** The **ΔABP** and **ΔABC** are co-planner and having same area. Point C and P are lying on the same side of line AB and **∠ABP** = 90°. The co-ordinate of A, B and C are : **20**
   A(10, 15, 20), B(40, 30, -10) and **C(60, -5, 40)**

3. A **right regular pentagonal pyramid (the right regular pentagon must be drawn by proper geometric construction method along with circum-circle)**,, side of base 30mm and height 50mm, rests one of its base corners on HP and at a distance of 45 mm in front of VP. The side opposite the corner is parallel to and 15 mm above the HP and inclined at 30° to the VP. Draw the projections of the pyramid. **20**
   (Do not draw the right regular pentagon using protector/diagonal scale – construct it by geometrical method only)

Group-B

4. A **right regular pentagonal prism (the right regular pentagon must be drawn by proper geometric construction method along with circum-circle)**, side of base 25 mm and height 65 mm, rests on an edge of its base on HP such that the rectangular face containing the base edge is inclined to the HP at 30°. A section plane perpendicular to the HP and inclined to the VP at 45° cuts the prism such that its long edge farthest away from the VP is bisected. Draw its top view, sectional front view, true shape of the section. **15**
   (Do not draw the right regular pentagon using protector/diagonal scale – construct it by geometrical method only)

5. Find out the shortest distance CD between the line AB and point C graphically. Point D is on line AB. The co-ordinate of points A, B and C are given below: **15**
   A(5, 50, -10), B(60, -10, 30) and C(30, -25, 5)
   Also graphically find out the co ordinate of point D.

P.T.O.

Form A: *Ref. No.* **Ex/PROD/ES/B/T/214/2024**

B.E. PRODUCTION ENGINEERING
SECOND YEAR FIRST SEMESTER EXAMINATION, 2024
(1ST Semester)
SUBJECT: PROJECTION AND SPATIAL GRAPHICS

Time : Three hours **Full Marks 100**

6. An actual distance of 1000 km between two points on a map is shown by a line 25 cm long. Construct the corresponding backward forward scales of kilometers, and also represent the distance of 794 km and 497km on the scale. **15**

7. Draw the **isometric view** of the following object shown in Fig.1 with proper dimension. **15**

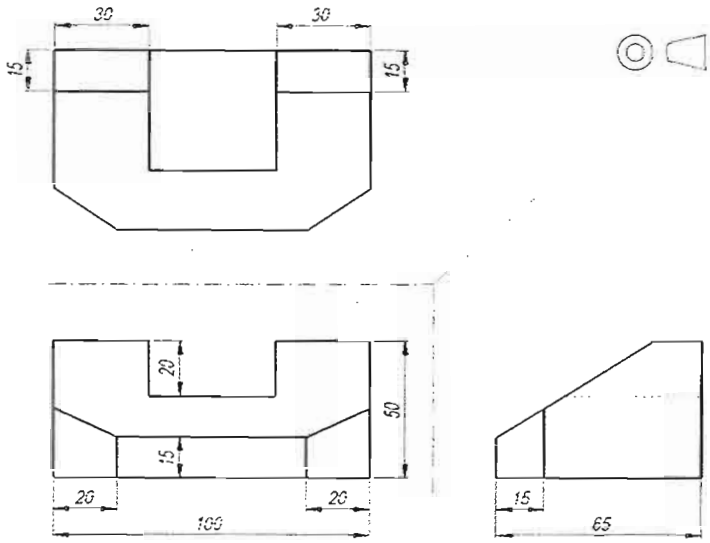

Fig.1

8. Draw the three orthographic view (**Third Angle Projection**) of the object shown in Fig.2 taking front view from the arrow side with proper dimension, scale and angle of projection. **15**

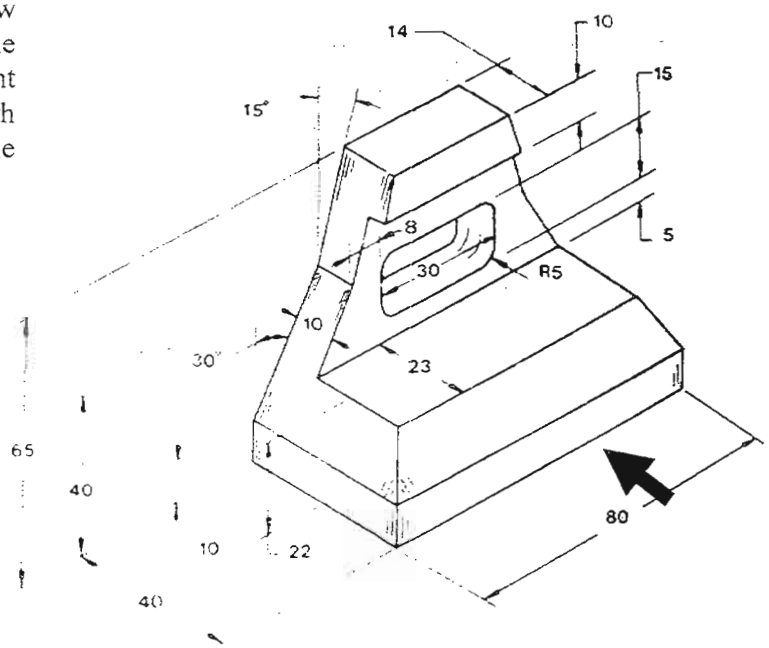

Fig.2