

**Bachelor of Mechanical Engineering 1<sup>st</sup> Year, 2<sup>nd</sup> Semester Examination, 2019 [Old]**

**Descriptive Geometry & Surface Development**

Time: 4 hours

Full Marks: 100

**Group A**

**[Answer any three]**

1. (a) Find the true length and the angles  $\alpha$ ,  $\beta$  and  $\gamma$  of the line AB by revolution method. The Projections are given: A (10, 20, -30); B (60, 35, -15).

(b) Find the true length and the angles  $\alpha$ ,  $\beta$  and  $\gamma$  of the line CD by auxiliary view method. The Projections are given: C (-30, -40, 25); D (40, 20, -35). [10+10]

2. The projections of two lines AB and XY are given. Find the point of intersection (if exists) between the lines.

A (-40, 30, -15); B (-10, 10, -46). X(-40, 10, -40); Y (-10, -30, -20). [20]

3. Find the point of intersection between the line XY and the plane ABC. The projections are given: X(-50, 5, -40), Y(-10, 35, -20) ; A(-50, 10, -20), B(-20, 40, -10), C(0, 20, -40). [20]

4. The projections of two planes ABC and XYZ are given. Find the line of intersection between the planes. A(20, 30, -10), B(60, 20, -20), C(30, -30, 0); X(40, 20, 20), Y(60, 50, 40) and Z(80, 10, -20). [20]

**Group B**

**[Answer any one]**

5. Find the Traces of the line AB. A(0, -30, 30); B(60, -30, 30). [10]

6. Find the Traces of the line CD. C(10, -80, 10). D(10, -10, 80). [10]

**Group C**

**[Answer any one]**

7. Consider an un-truncated right circular cylinder with base diameter 80 mm and height 110 mm. The upper part of the cylinder is removed by a cutting plane inclined at an angle of  $45^\circ$  (where angle is measured in reference to the base of the cylinder) centrally at a height of 50 mm from the base. Develop the total surface of the truncated cylinder. [30]

8. A right circular cone, diameter of the base 40 mm and the height 50 mm, rests on its base on HP. A section plane perpendicular to VP and inclined to Hp at  $45^\circ$  cuts the cone bisecting its axis. Develop the surfaces of the truncated cone. [30]