Answer Key: Civil Engineering Licensure Exam – Mock Exam (Day 9: Distance and Angle Measurement)

February 24, 2025

Answer Key

Section A: Multiple Choice Solutions

1. Bearing $N45°E$ corresponds to: **(a)** $45°$
2. Azimuth of $S60°E$: **(b)** $120°$
3. Converting azimuth $270°$ to bearing: **(b)** $S90°W$
4. Forward azimuth of $200°$:

$$\text{Forward azimuth} = 200° - 180° = 20°$$

   (a) $20°$

5. Interior angle sum for 5-sided traverse:

$$\sum \text{Interior Angles} = (n-2) \times 180°$$

$$= (5-2) \times 180 = 540°$$

   (c) $540°$

Section B: Problem-Solving Solutions

1. Azimuth of $S35°W$:

$$180° + 35° = 215°$$

2. Convert 210° to bearing:

$$210^\circ = S30^\circ W$$

3. Back azimuth:

$$\text{Back azimuth} = 75^\circ + 180^\circ = 255^\circ$$

4. Missing angle in traverse:

$$\sum \text{Interior Angles} = 540^\circ$$

$$85^\circ + 95^\circ + 100^\circ + 110^\circ + x = 540^\circ$$

$$x = 540 - 390 = 150^\circ$$

5. New azimuth after rotation:

$$125^\circ + 40^\circ = 165^\circ$$