

SAMPLE PAPERS
DIPLOMA FIRST SEMESTER EXAMINATION 2025 (JUT)
BASIC SURVEYING
DIPLOMA WALLAH

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Instructions:

1. **Question No. 1 is compulsory.** It contains 7 MCQs of 2 marks each.
 2. Answer any **FOUR** questions from the remaining (Q.2 to Q.7).
 3. All questions (Q.2 to Q.7) carry 14 marks each (typically divided into 7+7).
 4. Use neat sketches wherever necessary.
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Q.1 Compulsory (7 × 2 = 14 Marks)

1. Which of the following is a "Mistake" rather than a systematic error?
 - a) Incorrectly reading 3.5m as 5.3m
 - b) Chain being too long due to wear
 - c) Variation in temperature
 - d) Pull on tape
2. The ratio of the distance on the map to the distance on the ground is called:
 - a) Precision
 - b) Scale
 - c) Range
 - d) Slope
3. The conventional sign for a 'North line' is usually:
 - a) A circle
 - b) An arrow pointing upwards
 - c) A star
 - d) A dotted line
4. If the WCB of a line is 270° , its Reduced Bearing is:
 - a) N 90° W
 - b) S 90° W
 - c) W 90°

d) Both a and c

5. Parallax in leveling is removed by:

- a) Focusing the eyepiece and objective
- b) Leveling the instrument
- c) Centering the instrument
- d) Changing the staff

6. A 'Survey Station' is marked on the ground using:

- a) Tapes
- b) Wooden pegs
- c) Arrows
- d) Ranging rods

7. Which unit is used for measuring angular distances in surveying?

- a) Degrees, Minutes, Seconds
- b) Meters and Centimeters
- c) Liters
- d) Kilograms

Q.2 A. Differentiate between Systematic Errors and Accidental Errors in surveying. Give two examples of each. (7 Marks)

B. Explain the method of chaining on sloping ground using the **Stepping Method**. (7 Marks)

Q.3 A. Numerical: Calculate RLs for the following readings: 1.200 (BS), 1.500 (IS), 2.100 (FS/CP), 0.800 (BS), 1.400 (IS), 1.900 (FS). Use **Rise and Fall Method**. Benchmark RL = 50.000m. (7 Marks)

B. Convert the following bearings:

- i. WCB $235^{\circ}15'$ to RB.
- ii. RB N 35° W to WCB. (7 Marks)

Q.4 A. Explain the difference between a Level Surface and a Horizontal Surface. (7 Marks) ²⁴

B. Differentiate between Perpendicular Offsets and Oblique Offsets with a neat sketch. (7 Marks)

Q.5 A. Describe the procedure for performing Temporary Adjustments of a level (Setting up, Leveling, Focusing). (7 Marks)

B. Briefly describe the responsibilities of a surveyor and career progression provisions. (7 Marks)

Q.6 A. Define the following terms: Datum, Back Sight (BS), Fore Sight (FS), and Change Point (CP). (7 Marks)

B. Define the terms: Base Line, Check Line, Tie Line, and Tie Station as used in chain triangulation. (7 Marks)

Q.7 Write Short Notes on any FOUR (3.5 × 4 = 14 Marks) ³⁰

- a) Indirect Ranging (Reciprocal Ranging)
- b) Rodometer in modern surveying
- c) Primary classifications of surveying based on instruments used
- d) Instrumental vs. Personal Errors
- e) Arithmetic Check for Rise & Fall Method



Solutions for Paper 2**MCQ Answer Key**

1. a) Incorrectly reading 3.5m as 5.3m
2. b) Scale
3. b) An arrow pointing upwards
4. a) $N 90^{\circ} W$
5. a) Focusing the eyepiece and objective
6. b) Wooden pegs
7. a) Degrees, Minutes, Seconds

