

**B. TECH.**  
**(SEM II) THEORY EXAMINATION 2017-18**  
**SURVEYING AND LEVELLING**

*Time: 3 Hours**Total Marks: 100***Note:** Attempt all Sections. If require any missing data; then choose suitably.**SECTION A****1. Attempt all questions in brief. 2 x 10 = 20**

- a. Define leveling. Mention any two methods of leveling.
- b. Why a valley is obstacle to chaining?
- c. What is the use of optical square in surveying?
- d. Explain how tags are provided in chaining.
- e. Find WCB FOR QB: S50°15'W
- f. What do you understand by Fore bearing in leveling?
- g. Define change point in leveling.
- h. What do you mean by representative fraction?
- i. Mention any two Types of Scales.
- j. Define reciprocal levelling.

**SECTION B****2. Attempt any three of the following: 10 x 3 = 30**

- a. Discuss the cross survey in detail.
- b. Describe the intersection method of plane table surveying with suitable sketch.
- c. Discuss the different types of chain stating and their special advantages.
- d. Sketch and describe the prismatic compass in detail.
- e. Differentiate between temporary and permanent adjustment of level. mention suitable testing methods.

**SECTION C****3. Attempt any one part of the following: 10 x 1 = 10**

- (a) Explain the height of collimation method of reducing leveling notes. Also explain the procedures involved in making leveling notes.
- (b) What are different uses of theodolite and how traversing can be done by theodolite.

**4. Attempt any one part of the following: 10 x 1 = 10**

- (a) Explain in detail various accessories used in plane table surveying. Also mention it advantages.
- (b) Explain clearly two-point problems in plane table surveying? Explain how it is solved.

5. Attempt any *one* part of the following: 10 x 1 = 10
- (a) A steel tape was exactly 40cm long at 20<sup>0</sup>c when supported under a load of 10kg. A line was measured under the load of 15kg under the temperature of 32<sup>0</sup>c and found to be 780 m long. The cross-sectional area of tape = .03cm<sup>2</sup>, total weight of tape = .0693kg,  $\alpha$  for steel =  $11 \times 10^{-6}$  per <sup>0</sup>C, E for steel =  $2.1 \times 10^6$ kg/cm<sup>2</sup>. Compute the true length of line if tape is supported at every 30m.
- (b) Two straight lines AC and CB to be connected by a 3<sup>0</sup>C intersect at a chainage of 2760 m. The WCB of AC and CB are 45<sup>0</sup>30' and 75<sup>0</sup>30' respectively. Calculate the radians, tangent length, curve length, length of long chord, chainage of point commencement and tangency.
6. Attempt any *one* part of the following: 10 x 1 = 10
- a) A line was measured by a 20m chain which was accurate before starting the day's work. After chaining 900m, the chain was found to be 6cm too long. After chaining a total distance of 1575m, the chain was found to be 14cm too long. Find the true distance of the line.
- b) Two parallel lines 200m apart are to be joined by a reverse curve with the starting point of the curve 1500m, calculate the radius of the second arc, the chainage of the point of reverse curvature, and the finishing point of the reverse curve.
7. Attempt any *one* part of the following: 10 x 1 = 10
- (a) Discuss in detail the procedure used for the measurement of horizontal angle by repetition method.
- (b) Two tangents AB and BC meet at B, the deflection angle being 40<sup>0</sup>. It is proposed to connect AB and BC with a circular curve passing through a point P. the distance between P and B is 50m, and the line BP makes an angle of 80<sup>0</sup> with AB. Find the radius of the curve.