

**B.TECH SEM – IV (2007 COURSE) (CIVIL ENGG.) : SUMMER .  
2018**

**SUBJECT: SURVEYING AND LEVELING**

Day: **Thursday**  
Date: **07/06/2018**

**S-2018-2607**

Time: **10.00 AM TO 01.00 PM**  
Max. Marks: 80

**N.B:**

- 1) **Q. No.1 and Q. No.5** are **COMPULSORY**. Out of remaining questions attempt **ANY TWO** questions from each section.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers for all the sections should be written in **SEPARATE** answer book.
- 4) Use of non programmable **CALCULATOR** is allowed.
- 5) Draw neat diagram **WHEREVER** necessary.
- 6) Assume suitable data if necessary.

**SECTION-I**

- Q.1** a) Explain principle and working of auto level. (05)  
b) State principle axes of theodolite and state the relationship between them. (05)  
c) Explain with a sketch principle of working of EDM. (04)
- Q.2** a) Explain effects of curvature and refraction in leveling. Derive the formula for combined correction. (06)  
b) Explain two peg test of permanent adjustment of dumpy level. (07)
- Q.3** a) Explain repetition method of measurement of horizontal angles. State different errors eliminated in the repetition method of measurement of angles. (06)  
b) Explain with a neat sketch procedure of obtaining elevation of high object by trigonometrically leveling when base is accessible. (07)
- Q.4** a) Find the difference in elevation between stations P and Q from the data given below. (07)  
The stadia constants are  $K = 100, C = 0$ .

| Instrumental | Staff at | Vertical angle   | Stadia reading |       |       |
|--------------|----------|------------------|----------------|-------|-------|
| A            | P        | $+3^{\circ} 20'$ | 1.355          | 2.580 | 3.935 |
|              | Q        | $-1^{\circ} 25'$ | 0.985          | 1.660 | 2.335 |

- b) Explain the procedure of adjustment of plate level of theodolite (06)

**SECTION-II**

- Q.5** a) Explain with a neat sketch elements of simple circular curves. (05)  
b) State errors in plane table survey. (05)  
c) Describe uses of abney level. (04)
- Q.6** a) Calculate the data required for setting out simple circular curve by the method of offsets from chords produced for the following data. (07)  
i) Angle of intersection =  $120^{\circ}$ .  
ii) Chainage of point of intersection = 1500m.  
iii) Radius of curve = 250m.  
iv) Peg interval = 20 m.  
b) Explain with a sketch two theodolite method of setting out simple circular curves. (06)
- Q.7** a) Explain with a sketch Elements of Cubic parabola a transition curve. (07)  
b) Describe the procedure of traversing method of plane table survey. (06)
- Q.8** a) What is meant by three point problem in plane table survey? Explain any one method of solving it. (07)  
b) Explain the procedure of preliminary survey for route survey. (06)