

**B.Tech Sem – IV (2007 Course) (Civil Engg.) : WINTER -
2017**

SUBJECT : SURVEYING & LEVELING

Day : **Wednesday**
Date : **22/11/2017**

W-2017-2402

Time **02.30 PM TO 05.30 PM**
Max. Marks : 80

N.B.

- 1) Q.1 and Q.5 are **COMPULSORY**. Out of the remaining attempt any **TWO** questions from each section.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer book.
- 4) Use of non-programmable calculator is allowed.
- 5) Assume suitable data if necessary.

SECTION – I

- Q.1** a) State and define various axes of dumpy level. **(05)**
- b) State different errors that are eliminated by method of repetition of measurement of horizontal angles. **(04)**
- c) Explain principle and working of EDM. **(05)**
- Q.2** a) State and explain temporary adjustments of a dumpy level. **(06)**
- b) In leveling between two points A and B on opposite banks of a river, the level was set up near A and staff reading on A and B were 2.150 m and 3.565 m respectively. The level was then moved to B and the respective staff reading on A and B were 1.965 and 3.260 m. Find the true difference in levels of A and B. **(07)**
- Q.3** a) Explain the field procedure of theodolite traverse survey project. **(06)**
- b) Calculate the latitude and departure and closing error for the following closed traverse. **(07)**

Line	Length (m)	W.C.B.
AB	54	45 ⁰
BC	62	92 ⁰
CD	36	161 ⁰
DA	35	224 ⁰

- Q.4** a) A tacheometer is set up at an intermediate point of a traverse course PQ and the following observations were made on a vertically held staff. **(07)**

Staff Station	Vertical Angle	Staff Intercept (m)	Axial Hair Reading (m)
P	+8 ⁰	2.350	2.110
Q	+6 ⁰	1.950	1.875

Compute the length PQ and RL of Q if RL of P is 250 m. Assume multiplying constant as 100.

- b) State and define fundamental axes of theodolite. **(06)**

P.T.O.

SECTION – II

- Q.5** a) Explain the procedure of setting out simple circular curve by method offsets from long chord. (05)
- b) State the necessity of providing transition curves. (04)
- c) Describe preliminary survey for road project. (05)
- Q.6** a) Two tangents intersect at a chainage of 1220m. The deflection angle being 41° . A circular curve of 250 m radius is to be set. Calculate the data required to set out the curve. Assume peg interval 20 m. (08)
- b) With the help of neat sketch explain elements of compound curve. (05)
- Q.7** a) State and explain various methods to determine length of transition curve. (07)
- b) What is meant by orientation of plane table? Explain back sighting method of orientation. (06)
- Q.8** a) Describe principle, construction and use of box sextant. (07)
- b) What is meant by three point problem in plane table survey? (06)

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