

B.Tech Sem – IV (2007 Course) (Civil Engg.) : WINTER - 2018

SUBJECT: SURVEYING AND LEVELING

Day: Thursday
Date: 15/11/2018

W-2018-2745

Time: 02.30 PM TO 05.30 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) Derive the formula for obtaining curvature and refraction correction in leveling. (05)
- b) Explain the procedure of measuring deflection angles using a theodolite. (05)
- c) State any four permanent adjustments of transit theodolite. (04)
- Q.2** a) Describe the procedure of profile leveling for road work. (06)
- b) Following notes refer to reciprocal levels taken with a level across a river (07)
between two points A and B. Find the combined correction for curvature and refraction.

Instrument	Staff reading on		Remarket Dist AB = 900 _m
	A	B	
A	1.440	2.615	
B	1.770	2.950	

- Q.3** a) Explain with a neat sketch, procedure of obtaining elevation of high object by (06)
trigonometrical leveling when base is inaccessible.
- b) The survey data of a traverse is given in table below. The length and bearing of (07)
line DA were not recorded during the survey, calculate the length and bearing
of line DA.

Line	Length (m)	Bearing
AB	205	N 45° W
BC	285	N 62° E
CD	190	S 36° E
DA	-	-

- Q.4** a) Derive the expression for horizontal distance and elevation of vertically held (07)
staff from a tachometer when the line of sight is inclined.
- b) Explain the principle of working of digital theodolite. (06)

P.T.O.

SECTION-II

- Q.5** a) With the help of neat sketch explain elements of compound curves. (05)
- b) Explain intersection method of plane table survey. (05)
- c) Describe the procedure of reconnaissance survey for road work. (04)
- Q.6** a) Calculate the data required for setting out simple circular curve for the following data by method of deflection angles. (07)
- i) Angle of intersection = 140° .
 - ii) Chainage of point of intersection = 2200_m.
 - iii) Degree of the curve = 6° .
 - iv) Peg interval = 20m.
- b) Explain the procedure of setting out simple circular curve by offsets from long chord. (06)
- Q.7** a) What is necessity of providing transition curves? Describe various methods of obtaining length of transition curves. (07)
- b) List out various accessories used in plane table and state function of each. (06)
- Q.8** a) Explain with a neat sketch procedure of solving two point problems in plane table survey. (07)
- b) Describe principle, construction and working of box sextant. (06)

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