

## MANIPAL UNIVERSITY

FOURTH SEMESTER B. ARCH. DEGREE EXAMINATION – APRIL/MAY 2014

SUBJECT: SURVEYING AND LEVELLING (ARC-216)  
(2007 SCHEME)

Saturday, May 10, 2014

Time: 10:00 – 13:00 Hrs.

Max. Marks: 50

✍ Answer any FIVE full questions. Missing data, if any, may suitably be assumed.

- 1A. Explain the different instruments used in chain surveying.
- 1B. What are cumulative and compensating errors in chain survey? Explain the different sources of error in chain survey.

(4+6 = 10 marks)

- 2A. What are the conditions to be fulfilled by survey stations and survey lines?

- 2B. How do you carry out surveying when the following obstacles are met with

- i) Obstacle to ranging but not chaining  
ii) Obstacle to chaining but not ranging

(4+6 = 10 marks)

- 3A. What are i) Leveling ii) Orientation iii) Centering in plane table survey? Explain.

- 3B. Explain the radiation method of plane table survey for mapping.

(3+7 = 10 marks)

- 4A. Explain the process of reciprocal leveling. How is it advantageous?

- 4B. In a leveling operation with a dumpy level and a 4 m levelling staff, the following consecutive readings were obtained. 2.225, 2.130, 1.665, 3.125, 3.870, 1.045, 1.650, 3.225, 2.970 and 2.455 metres. The first reading was taken on a bench mark of RL 185.000 m, the dumpy level was shifted after second and fifth readings. Rule out a page of a level book, book the readings and determine the reduced levels of all the points. Use either 'rise and fall method' or 'height of collimation method'.

(3+7 = 10 marks)

- 5A. What do you mean by the term contour interval? Explain the factors which affect the selection of contour interval for a given work.

- 5B. Explain the indirect method of obtaining contours.

(5+5 = 10 marks)

- 6A. How is the theodolite used in measuring horizontal angles with better accuracy? Explain.

- 6B. How do you use a theodolite for the following:

- i) Measuring the bearing of a line      ii) Measuring deflection angle  
iii) Extending a given line

(4+6 = 10 marks)

