USN | | | | | | | | | | |

Second Semester B.Arch. Degree Examination, June/July 2013
Surveying and Levelling

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions.*

1 a. Explain fundamental principles of surveying with neat sketches.   (06 Marks)
   b. Explain the following terms:
       i)   Plan and map
       ii)   Shrinkage factor
       iii) Representative fraction   (06 Marks)
   c. Explain the classification of surveying.   (08 Marks)

2 a. Explain the following terms:
       i)   Survey station
       ii)   Base line
       iii) Tie line
       iv)   Check line
       v)   Oblique offset.   (10 Marks)
   b. The plan of an area has shrunk such that a line originally 10cm now measures 9.5cm. If the original scale of the plan was 1cm = 10m, determine:
       i)   The shrinkage factor
       ii)   Shrunk scale.
       iii) Correct distance corresponding to a measured distance of 98m.
       iv)   Correct area corresponding to a measured area of 10,000m^2.   (10 Marks)

3 a. Explain different methods to erect a perpendicular to a chain line from a point on it.
                                                                                  (10 Marks)
   b. What are the instruments used to set out right angles to a chain line? Explain any two instruments.   (10 Marks)

4 a. Explain the different errors in chaining.   (10 Marks)
   b. A 30m chain used to measure the length of a line was tested before the line was measured and found to be 29.95m long. The line was measured as 590.48m. The chain was tested again and found to be 30.08m long. Find the true length of the line.   (10 Marks)

5 a. What are the advantages and disadvantages of plane table surveying?   (05 Marks)
   b. What are the different accessories used in plane table surveying?   (05 Marks)
   c. Explain the different methods of plane tabling.   (10 Marks)

6 a. Explain the following terms in leveling:
       i)   Datum surface
       ii)   Line of collimation
       iii) Bench mark
       iv)   Elevation
       v)   Foresight.   (10 Marks)

b. The following staff readings were recorde in a levelling operation:
1.185, 2.604, 1.925, 2.305, 1.155, 0.864, 1.105, 1.685, 1.215, 1.545, 0.605.
Station A is BM of RL 185.685m. Find RL's of all the points by rise and fall method only. The first reading was to paint A and the instrument was shifted after the readings 2.604, 0.864 and 1.215. **(10 Marks)**

7 a. With neat sketches, explain the different characteristics of contours. **(10 Marks)**
b. Write short notes on direct and indirect methods of contouring. **(10 Marks)**

8 a. Explain the following terms related to the theodolite:
   i) The vertical axis
   ii) The horizontal axis
   iii) Line of collimation
   iv) Face left observation
   v) Face right observation. **(10 Marks)**
b. Explain temporary adjustments in theodolite operation. **(10 Marks)**

* * * * *