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**Question Paper Code : 91221**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

Third Semester

Civil Engineering

CE 2204/CE 37/10111 CE 307 — SURVEYING – I

(Regulation 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give the conventional symbols/signs for the following :
  - (a) Chain Line
  - (b) Road over Railway.
2. Name any two instruments needed for chaining and their use also.
3. What are the personal articles of a surveyor can cause local attraction?
4. Find the true bearing of the line MN if its magnetic bearing is S 35°W and the declination is 4° 30' West.
5. What are the different corrections applied to levelling?
6. Define the terms 'Contour interval' and 'Horizontal Equivalence'.
7. State the kind of error, which can be eliminated by taking face left and face right observations.
8. What is the advantage of fast needle method traversing over the loose needle method traversing?
9. What do you mean by degree of a curve?
10. Name the instruments used for mine surveying.

## PART B — (5 × 16 = 80 marks)

11. (a) (i) State and explain the principles of surveying. (9)  
 (ii) Describe the construction and working of an optical square with a neat sketch. (7)

Or

- (b) (i) What do you mean by ranging? Explain the two methods of ranging. (9)  
 (ii) A chain line AB crosses a river, M and N being on the near and distant banks respectively. A point P is measured 105 m at right angles to AB from M. At P, PA and PN are set out such that angle APN is 90°. AM measured is 85 m. Find MN, the width of the river. (7)

12. (a) Following bearings were taken in running a compass traverse. At what stations do you suspect local attractions? Find the corrected bearings and included angles. (16)

Line	F.B.	B.B.
PQ	N 46° 10'E	S 46° 10'W
QR	S 60° 40'E	N 61° 20'W
RS	S 10° 30'E	N 08° 50'W
SP	N 79° 40'W	S 80° 40'E

Or

- (b) Discuss the following in detail about plane tabling (6)  
 (i) Errors. (5)  
 (ii) Advantages and Limitations. (5)  
 (iii) Method of Intersection

13. (a) In running fly levelling from a BM of RL 100m, the following readings were taken.

Back Sights	3.125	1.030	1.295	1.855
Fore Sights	1.225	3.290	2.085	

From the last position of the instrument, 6 pegs at 25 m intervals are to be set out on a uniformly falling gradient of 1 in 250. The top of first peg is to have a RL of 99.205. Work out the staff readings required to set out the tops on the given gradient. Show the results as it is shown in a level book. (16)

Or

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State the different methods of contouring. Explain any two methods. (9)

(ii) What are Contours? State and brief the characteristics of Contours. (7)

(a) Explain the various sources of errors in theodolite surveying. (16)

Or

(b) Following lengths and bearings were recorded in running a theodolite traverse in the counter clockwise direction, the length of CD and bearing of DE having been omitted. Determine the omitted measurements. (16)

Line	Length in m	R.B.
AB	281.4	S 69°11'E
BC	129.4	N 21°49'E
CD	?	N 19°34'W
DE	144.5	?
EA	168.7	S 74°24'W

15. (a) (i) Explain the double theodolite method of setting out of a simple curve. (9)

(ii) Draw a neat sketch showing a simple curve and its component features and define each of them. (7)

Or

(b) Explain the various surveys to be carried out for the effective implementation of a highway project. (16)