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**Question Paper Code : 25048**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Third Semester

Civil Engineering

CE 8351 — SURVEYING

(Common to Environmental Engineering)

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write the Principles of surveying.
2. Convert the whole circle bearing to quadrantal bearing  
(a)  $170^{\circ} 12'$   
(b)  $211^{\circ} 54'$
3. Write the advantages of measuring horizontal angle by repetition method.
4. What are the advantages of tacheometric surveying over other methods?
5. What do you understand by horizontal control? What are different methods of establishing a horizontal control?
6. What are different types of errors in surveying measurements? Give one example of each.
7. What are the various operations conducted in Hydrographic surveying?
8. Determine the local mean time at a longitude  $60^{\circ}\text{E}$  if the local hour angle of the mean sun is  $5\text{h}30\text{m}20\text{s}$ .
9. Write about the maintenance of Total Station equipment.
10. Give the importance of Selective Availability in GPS.

PART B — (5 × 13 = 65 marks)

11. (a) In a closed traverse ABCDE, the bearing of the line AB was measured as  $150^{\circ}30'$ . The included angles were measured as under, Angle A =  $130^{\circ}10'$ ; Angle B =  $89^{\circ}45'$ ; Angle C =  $125^{\circ}22'$ ; Angle D =  $135^{\circ}34'$ ; Angle E =  $59^{\circ}9'$ . Calculate the bearings of all other lines. (13)

Or

- (b) The following readings were observed successively with a levelling instrument. The instrument was shifted after fifth and eleventh readings.

- (i) 0.585
- (ii) 1.010
- (iii) 1.735
- (iv) 3.295
- (v) 3.775
- (vi) 0.350
- (vii) 1.300
- (viii) 1.795
- (ix) 2.575
- (x) 3.375
- (xi) 3.865
- (xii) 1.735
- (xiii) 0.635
- (xiv) 1.605 m.

Draw up a page of level book and determine the R.L. of various point on which the first reading was taken is 136.440. Use Rise and Fall method. (13)

12. (a) A tacheometer is used to obtain the difference of levels between two points A and B. The instrument is set up at another station C, and the following observations were taken

Staff at	Vertical Angle	Stadia readings
A	$-6^{\circ}30'$	3.500, 2.815, 2.130
B	$-8^{\circ}30'$	1.870, 0.990, 0.110

If the R.L. of A is 100.000, determine the R.L. of B. Also determine the horizontal distance of A from C. Take  $k = 50.0$  and  $C = 0.50$ . (13)

Or

- (b) What is contouring? Describe about direct contouring and various methods of indirect Contouring. (13)

13. (a) Calculate the heights and distances by trigonometrical levelling. (13)

Or

- (b) Find the most probable values of the following angles closing the horizon at a station by methods of correlate (13)

$$P = 45^{\circ}23'37'' \quad \text{weight 1}$$

$$Q = 75^{\circ}37'15'' \quad \text{weight 2}$$

$$R = 125^{\circ}21'21'' \quad \text{weight 3}$$

$$S = 113^{\circ}37'59'' \quad \text{weight 3}$$

14. (a) What do you understand by hydrographic surveying? Explain about the various operations conducted in hydrographic surveying. (13)

Or

- (b) Determine the azimuth and altitude of a star from the following data

$$\text{Declination of star} = 10^{\circ}40'S$$

$$\text{Hour angle of star} = 325^{\circ}$$

$$\text{Latitude of the observer} = 48^{\circ}N \quad (13)$$

15. (a) Draw a neat sketch and explain the working principle of a Microwave Total Station equipment. (13)

Or

- (b) Explain about the concept and segments of GPS with neat sketch. (13)

PART C — (1 × 15 = 15 marks)

16. Elaborate the procedure to be followed to conduct the survey of a village using modern survey equipments. (15)