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Question Paper Code : X10234

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020

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. Recall true meridian.
2. Change the following whole circle bearing to reduced bearing :
 - a) $155^{\circ} 20'$
 - b) $322^{\circ} 30'$
3. Identify the use of theodolite.
4. How elimination of parallax is done in theodolite ?
5. Under what circumstance do you recommend the triangulation system in surveying projects ?
6. Quote the principles of least square.
7. Enlist the equipment's needed for soundings.
8. Define Azimuth.
9. Blog the importance of GPS.
10. What do you understand by the term Anti-spoofing in GPS.

PART – B

(5×13=65 Marks)

11. a) i) Explain plotting of chain survey. (5)
ii) What is ranging ? Explain direct ranging and indirect ranging in detail. (8)

(OR)



- b) i) Source of errors in levelling. (5)
ii) The following bearings were observed with a compass. Calculate the interior angles. (8)

Line	F.B
AB	180° 30'
BC	62° 30'
CD	35° 15'
DE	256° 40'
EA	233° 10'

12. a) i) The tacheometer was set up at a station A and the readings on a Vertically held staff at B were 2.255, 2.605 and 2.955, the line of sight being at an inclination of + 8° 24'. Another observation on the Vertically held staff at B.M gave the readings 1.640, 1.920 and 2.200, the inclination of the line of sight being + 1° 6'. Calculate the horizontal distance between A and B, the elevation of B if the R.L of B.M. is 418.685 m. The constant of the instruments were 100 and 0.3. (8)

- ii) Write a note on stadia constant. (5)
(OR)

- b) i) Narrate the characteristic of contouring. (8)
ii) Write the uses of contour plan and map. (5)

13. a) i) After measuring the length of a baseline, the correct length of the line is computed by applying various applicable corrections. Discuss the following corrections and provide expressions for determining them (1) Correction for temperature (2) Correction for pull (3) Correction for sag. (8)

- ii) Write a technical note on trigonometrical levelling. (5)
(OR)

- b) i) State the factors to be considered while selecting base line and also explain with neat sketches how to extend the base line in the field. (8)
ii) Explain in detail about Horizontal control and its methods and Vertical Control and its Methods. (5)

14. a) i) What are tides ? Explain its types and formation. (5)
ii) Determine the hour angle and declination of a star from the following data :

- i) Altitude of the star = 22° 36'
ii) Azimuth of the star = 42° W
iii) Latitude of the place of observation = 40° N (8)

(OR)



- b) i) What are the methods employed in locating soundings ? (3)
ii) The following observations of the sun were taken for azimuth of a line in connection with a survey.
Meantime = 16 h 30 m
Mean hour angle between sun and referring object = $18^{\circ} 20' 30''$
Mean corrected altitude = $33^{\circ} 35' 10''$
Declination of the sun from Nautical Almanac = $+ 22^{\circ} 05' 36''$
Latitude of the place = $52^{\circ} 30' 20''$.
Determine the azimuth of the line. (10)

15. a) i) Summarize the operations involved while using Total Stations. (6)
ii) Paraphrase in detail the source of error in total station. (7)

(OR)

b) i) Explain orbit determination and representation in GPS surveying. (6)
ii) Explain in detail about the errors in GPS and the factors affecting the GPS. (7)

PART – C

(1×15=15 Marks)

16. a) Determine the gradient from a point A to a point B from the following observations made with a tacheometer fitted with an analectic lens. The constant of the instrument was 100 and the staff was held vertically :

Instrument station	Staff station	Bearing	Vertical angle	Staff readings
P	A	134°	$+10^{\circ} 32'$	1.360, 1.915, 2.470
	B	224°	$+05^{\circ} 06'$	1.065, 1.885, 2.705

(OR)

- b) Enumerate the study on measuring principle and working principle of Electro optical surveying (Total Station) with neat sketches.
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