KUMARAGURU
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Register Number: ……..

B.E DEGREE EXAMINATIONS: DEC 2014

(Regulation 2009)

Third Semester

CIVIL ENGINEERING

CEE106**:** Surveying I

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Accidental errors are
   a) Cumulative errors b) Compensating errors
   c) Systematic errors d) Mistakes
2. The length of one link of Surveyor's Chain is
   a) 20 cm b) 1 foot
   c) 0.6 foot d) 0.5 foot
3. If the whole circle bearing of lines AB and AC are 40^o 40' and 260^o 10', the included angle BAC is equal to
   a) 221^o 20' b) 219^o 30'
   c) 140^o 30' d) 122^o 20'
4. The difference between back bearing and fore bearing is
   a) 90^o b) 270^o
   c) 180^o d) 240^o
5. The correction for curvature in m is
   a) $\frac{1}{7}\frac{d^2}{2R}$ b) $\frac{6}{7}\frac{d^2}{2R}$
   c) $\frac{d^2}{2R}$ d) $\frac{d^2}{R}$
6. Least count of metric Telescopic levelling staff is
   a) 5 mm b) 5 cm
   c) 0.5 mm d) 0.5m

7. Swinging the telescope means rotating the telescope in

a) Horizontal plane b) Vertical plane

c) Both vertical and horizontal plane d) Inclined Plane

8. If " l " is length and θ is the reduced bearing of any line, then the latitude of line 'L' is

a) l cos θ b) l sin θ

c) l tan θ d) l sec θ

9. The additive constant C of the Tacheometer is equal to

a) f_1/f_2 b) f/s

c) f_1+f_2 d) f+d

10. In Tacheometer, in the internal telescope the provided extra lens is

a) Plano Concave lens b) Double Concave lens

c) Plano Convex lens d) Double Convex lens

PART B (10 x 2 = 20 Marks)

11. Distinguish between plane surveying and geodetic surveying.
12. What is Indirect or Reciprocal Ranging?
13. Define magnetic declination.
14. List any two merits and demerits of Plane table surveying.
15. What is meant by sensitiveness of bubble tube?
16. Recall the word contour interval.
17. Define the term Transiting in context with theodolite.
18. How the errors are closed in Bowditch's method?
19. Give the distance equation when the line of sight is inclined.
20. Write the principle of stadia method.

PART C (5 x 14 = 70 Marks)

21. a) (i) Discuss about different types of tape corrections. (10)

(ii) A surveyor measured the distance between two points on the plan drawn to a scale 1cm=40m and the result was 468m.Later, however, he discovered that he used a scale of 1cm=20m.Find the true distance between the two points. (4)

(OR)

b) (i) A steel tape 20 m long standardized at 55^o F with a pull of 10kg was used for measuring a base line. Find the correction per tape length, if the temperature at the time of measurement was 80^oF and the pull exerted was 16kg. Weight of 1 (10)

cum of steel = 7.86 g. Weight of tape = 0.8 kg. E = 2.11 X 10^6 kg/cm^2.

Co-efficient of expansion of tape per 1^O C = 6.2 x 10^{-6}.

(ii) List the instruments which are used to set out the right angles. (4)

22. a) The following fore and back bearings were observed in a closed traverse

Line	FB	BB
AB	71^o 05’	250^o 20’
BC	110^o 20’	292^o 35’
CD	161^o 35’	341^o 45’
DE	220^o 50’	40^o 05’
EA	300^o 50’	121^o 10’

At what stations do you suspect local attraction? Find the correct bearing and interior angles.

(OR)

b) (i) Name the different method of plane table surveying. (4)

(ii) Explain the procedure of solving Two point problem by plane table surveying. (10)

23. a) The following series of reading of back sights and fore sights were taken in fly leveling. The first reading was taken on a point of R.L. of 432.384 m. Find R.L. of all points. Apply the usual checks.

2.228;1.606;0.988;2.090;2.864;1.262;0.602;1.004; 2.684

(OR)

b) (i) The following leveling readings were taken with 3 m leveling staff. If R.L of first point is+ 150.000 m, and distance between the first point and last point is 450 m find out the gradient between end points. Use the rise and full method for the reduction of levels. (11)

0.895, 1.340, 2.695, 1.455, 1.960, 2.080, 2.875, 0.985, 1.465, 1.870, 2.375.

(ii) Write the uses of reciprocal leveling. (3)

24. a) Discuss about the different parts of transit the odolite with neat sketch.

(OR)

b) A closed traverse was conducted round an obstacle and the following observations were made work out the missing quantities.

Side	Length in m	Azimuth
AB	500	98^{o} 30’
BC	3620	30^{o} 20’
CD	468	298^{o} 30’
DE	----	230^{o} 00’
EA	----	150^{o} 10’

25. a) Derive the formulae to calculate the horizontal distances and vertical intercepts for different cases by Tangential method.

(OR)

b) (i) Define Tacheometry. (2)

(ii) A tacheometer is set up at an intermediate point on a traverse course and the following observations are made on a vertically held staff: (12)

Staff station	Vertical angle	Staff intercept m	Axis hair readings m
P	$+8^{\circ}36'$	2.350	2.105
Q	$+6^{\circ}6'$	2.055	1.895

The instrument is fitted with an anallactic lens and the constant is 100. Compute the length of PQ and reduced level of Q, that of P being 321.50m.

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