Reg. No. | | | | | | | | | | | | |

Question Paper Code : 57147

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Third Semester

Civil Engineering

CE 6304 – SURVEYING – I

(Regulations 2013)

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

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. What is the Well conditioned triangles ?

2. List out the types of obstacles in chaining.

3. What is meant by local attraction ?

4. Define Isogonic line and Agonic line.

5. Explain the temporary adjustment of a dumpy level.

6. What is meant by Benchmark ? What are different types of Benchmarks ?

7. Write a formula for correction for curvature and refraction.

8. Define. : (i) Overhanging cliff (ii) Vertical cliff

9. What is meant by substance bar ?

10. What are the different systems of tachometer survey ?

PART – B (5 × 16 = 80 Marks)

11. (a) (i) Explain the classification of surveying. **(8)**

(ii) Two points P and Q were selected on the opposite banks of a river. To determine the length PQ a line PA was laid down perpendicular to PQ and was measured to be 150 m. Another line AB point B on the line QP produced was erected perpendicular to QA, the measured length of PB was found to be 35 m. Determine the length of PQ. **(8)**

OR

(b) A line was measured with a steel tape which was exactly 30 m at 20 °C and at a pull of 10 kg the measured length being 1650 m. The temperature during the measurement was 30 °C and the pull applied was 15 kg. Assuming the tape to be supported at every 30 m. Calculate the true length if the cross sectional area of the tape was 0.025 cm^2. The coefficient of expansion of the material per °C 3.5×10^{-6}. Modulus of elasticity 2.1×10^6 kg/cm^2. Weight of the material 7.8 gms/cm^3. **(16)**

12. (a) The following bearings were observed in running a closed traverse

Line	F.B	B.B
AB	75° 5'	254° 20'
BC	115° 20'	296° 35'
CD	165° 35'	345° 35'
DE	224° 50'	44° 5'
EA	304° 50'	125° 5'

At what stations do you suspect the local attraction ? Determine the correct magnetic bearings. If declination was 5° 10' E, what are the true bearing ? **(16)**

OR

(b) (i) What is two point problem and Explain with neat sketch. **(8)**

(ii) Explain with sketches. The following methods using plane table. **(8)**

(1) Radiation

(2) Intersection

13. (a) The following staff readings were observed successively with a level. The instrument having been moved after the second, fifth and eight readings 0.675, 1.230, 0.750, 2.565, 2.225, 1.935, 1.835, 3.220, 3.115 and 2.875. The first staff reading was taken with a staff held on a benchmark of reduced level 100.000. Enter the reading in the level book from and find reduced level of all points by any one methods. **(16)**

OR

(b) The following consecutive reading were taken with a dumpy level and 5 m levelling staff on continuously sloping ground at a common interval of 20 m. The RL of first point 525.050 m. Rule out of a page of level field book and enter reading. Calculate RL by height of collimation method and find the gradient between first and last point.

0.410, 1.025, 2.085, 2.925, 3.620, 4.595, 0.715, 2.115, 3.090 and 4.400. **(16)**

14. (a) The following perpendicular offsets were taken at 10 m intervals from a survey line to an irregular boundary line 3.25, 5.60, 4.20, 6.65, 8.75, 6.20, 3.25, 4.20 and 5.65. Calculate the area enclosed between the survey line, the irregular boundary line and the first and last offsets by the application of 1. Trapezoidal rule 2. Simpson's rule **(16)**

OR

(b) A railway embankment is 10 m wide with side slops 1.5 : 1 assuming the ground to be level in a direction traverse to the centre line, calculate the volume contained in a length of 120 m. The centre height at 20 m intervals being in metres 2.2, 3.7, 3.8, 4.0, 3.8, 2.8 and 2.5. **(16)**

15. (a) Determine the gradient from a point A to point B from the following observations made with a tachometer fitted with an analytic lens. The constant of the instrument was 100, Zero and the staff was held vertically. (16)

Inst. station	Staff station	Bearing	Vertical angle	Staff Reading
P	A	134°	+10° 32'	1.360, 1.915, 2.470
	B	224°	+5° 6'	1.065, 1.885, 2.705

OR

(b) A tachometer was setup at a station C and the following readings were obtained on a staff was held vertically. K = 100 and C = 0.15.

Inst. Station	Staff station	Vertical angle	Staff Reading
C	BM	–5° 20'	1.150, 1.800, 2.450
C	D	+8° 12'	0.750, 1.500, 2.250

RL of BM 750.500. Calculate the horizontal distance CD and RL of D. (16)