

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2025

Third Semester

Civil Engineering**24CEPC303 - SURVEYING**

Regulations - 2024

Duration: 3 Hours

Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

	Marks	K-Level	CO
1. In a well-conditioned triangle, no angle should be less than (a) 30° (b) 60° (c) 90° (d) 120°	1	K1	CO1
2. B.B of line AB is 220 degree, find the F.B of line AB (a) 40° (b) 80° (c) 120° (d) 360°	1	K2	CO1
3. In the rise and fall method, what is the Reduced Level (RL) of a point if the previous RL is 100 m, and a rise of 2.5 m is observed? (a) 102.5 m (b) 97.5 m (c) 100 m (d) 105 m	1	K2	CO2
4. Two contour lines of different elevations can cross each other only in case of (a) A well (b) A cliff (c) A cave (d) A cliff or A cave	1	K1	CO2
5. The _____ theodolite allows the telescope to revolve completely in a vertical plane. (a) Transit (b) Non-transit (c) Vernier (d) Optical	1	K1	CO3
6. The additive constant for the tachometer is (a) f/I (b) I/f (c) f/d (d) $f+d$	1	K1	CO3
7. If the angle $\alpha = 54^{\circ}32'12''$ having weight 7, is multiplied by a factor 5 then find the resulting weight of that angle. (a) 7/25 (b) 25/7 (c) 175 (d) 571	1	K2	CO4
8. In the principle of least squares, residual error will be _____ (a) Maximum (b) Minimum (c) Negligible (d) Nor error occurs	1	K1	CO4
9. _____ is used upto 100km range? (a) Microwave (b) Infrared (c) Visible range (d) Ultra violet	1	K1	CO5
10. The point on the celestial sphere vertically below the observer's position, is called (a) Zenith (b) Celestial point (c) Nadir (d) Pole	1	K1	CO6

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11. Compare plane surveying and geodetic surveying.	2	K2	CO1
12. List out the merits of plane table surveying.	2	K1	CO1
13. What is meant by change point in leveling?	2	K1	CO2
14. Define contour interval.	2	K1	CO2
15. Outline the reason for taking face left & face right observations.	2	K2	CO3
16. What is meant by axis signal correction in trigonometrical levelling?	2	K1	CO3
17. Write short notes on Primary Triangulation.	2	K2	CO4
18. Compare true Error and residual error.	2	K2	CO4
19. Compare the microwave and the electro-optical systems adopted in total station.	2	K2	CO5
20. What do you understand from the term "Satellite configuration"?	2	K1	CO5
21. Compare "Tropic of Cancer" with "Tropic of Capricorn".	2	K2	CO6
22. List out the types of vertical curve.	2	K1	CO6

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23. a) The following bearing are taken on a closed compass traverse 11 K3 CO1
- | | | |
|------|---------|---------|
| Line | F.B | B.B |
| AB | 80°10' | 259°0' |
| BC | 120°20' | 301°50' |
| CD | 170°50' | 350°50' |
| DE | 230°10' | 49°30' |
| EA | 310°20' | 130°15' |

Identify the interior angles & correct them for observational errors. Assuming the observed bearing of the line CD to be correct adjust the remaining sides.

OR

- b) The following are the bearings observed in a compass traverse. 11 K3 CO1
- | | | |
|------|----------------------|----------------------|
| Line | FB | BB |
| AB | 305 ⁰ 00' | 125 ⁰ 00' |
| BC | 75 ⁰ 30' | 254 ⁰ 30' |
| CD | 115 ⁰ 30' | 297 ⁰ 00' |
| DE | 165 ⁰ 30' | 345 ⁰ 30' |
| EA | 225 ⁰ 00' | 44 ⁰ 00' |

Identify the local attraction? Determine the corrected bearings.

24. a) The following consecutive readings were taken with a levelling instrument at intervals of 20m. The readings are 2.375, 1.730, 0.615, 3.450, 2.835, 2.070, 1.835, 0.985, 0.435, 1.630, 2.255 and 3.630 m. The instrument was shifted after 4th & 8th readings. The first reading was taken on a BM of RL 110.200m. Solve the RL of all the points. 11 K3 CO2

OR

- b) The following consecutive readings were taken with a dumpy level and 4 metre levelling staff on a continuously sloping ground at 30 m intervals. 0.680, 1.455, 1.855, 2.330, 2.885, 3.380, 1.055, 1.860, 2.265, 3.540, 0.835, 0.945, 1.530 and 2.250. The R.L. of the first point was 80.750 m. Rule out a page of a level book and Enter the above readings and identify the R.L. of various staff stations. 11 K3 CO2

25. a) Solve the gradient from a point A to B from the following observation made with a tacheometer fitted with an anallactic lens. The constant of the instrument was 100 and the staff was held vertically. 11 K3 CO3

Inst at	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) Identify the RL of Q from the following observations: 11 K3 CO3
- Horizontal distance between P & Q : 9290 m
 Angle of elevation from P to Q : 2°6'18"
 Height of signal at Q : 3.96m
 Height of instrument at P : 1.25 m
 Coefficient of refraction : 0.07
 R sin 1" = 30.88 m
 RL of P = 396.580

26. a) From a satellite station 'S' at a distance of 5.8 m from main triangulation station A, 11 K3 CO4
 the following direction were observed
 $A = 0^{\circ}00'00''$
 $B = 130^{\circ}18'30''$
 $C = 210^{\circ}24'06''$
 $D = 296^{\circ}06'11''$
 Length $AB = 3265.5$ m
 $AC = 4022.2$ m
 $AD = 3086.4$ m
 Solve the directions of AB, AC and AD.

OR

- b) The following angles were measured at a station 'O' so as to close the horizon: 11 K3 CO4
 $P = 83^{\circ} 42' 28''.75$ Weight 3
 $Q = 102^{\circ} 15' 43''.26$ Weight 2
 $R = 94^{\circ} 38' 27''.22$ Weight 4
 $S = 79^{\circ} 23' 23''.77$ Weight 2
 Identify the most probable value of each angle.

27. a) Explain the features of a total station. 11 K2 CO5

OR

- b) Summarize in detail about the different segments of GPS. 11 K2 CO5

28. a) Explain in detail about the Route survey for Highways, railways and waterways. 11 K2 CO6

OR

- b) Summarize the different coordinate systems by which the position of heavenly body can be specified. 11 K2 CO6