KUMARAGURU
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Register Number:……..

B.E DEGREE EXAMINATIONS: NOV / DEC 2014

(Regulation 2009)

Fourth Semester

CIVIL ENGINEERING

CEE109: Surveying II

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. The process of laying out Engineering projects by placing pegs at the site of works is known as
   a) Setting out works b) Setting out grades
   c) Preliminary survey d) Field location
2. The type of curve introduced between a straight and simple curve or between two simple curves is termed as
   a) Simple circular curve b) Compound curve
   c) Transition curve d) Left hand curve
3. The type of signals used for sights of less than 30kms and serve the purpose only during day time
   a) Luminous signals b) Non-Luminous
   c) Night signals d) Target signals
4. The subsidiary station is selected nearer to the main station for taking observation to other Triangulation station is termed as
   a) Eccentric station b) Reduction to the centre
   c) Survey station d) Tidal station
5. The value of quantity depends on one or more other quantities is termed as
   a) Independent quantity b) True value of quantity
   c) Conditioned quantity d) Observed value of quantity
6. The inter connecting network of level circuits formed by level lines inter connecting three or more benchmarks is called
   a) Level nets b) Bench marks
   c) Quadrilateral frame work d) Angle adjustment

7. The point or place at which the mean sea level observation are taken is known as

a) Survey station b) Tidal station

c) Satellite station d) Triangulation station

8. The special type of Instrument used to measure vertical and horizontal angle to measure distances is called

a) Theodolite b) Dumpy level

c) Tilting level d) Total station

9. The type of Remote sensing using sun as a source of energy is called

a) Passive Remote sensing b) Active Remote sensing

c) Microwave Remote sensing d) Spatial resolution

10. The type of error occurred in the Total station survey is caused when the line of sight is not perpendicular to the Tilting axis is called

a) Tilting axis error b) Line of sight error

c) Vertical axis error d) Vertical index error

PART B (10 x 2 = 20 Marks)

11. Enumerate the various stages of Route surveys for highways.
12. State the various angular methods used for setting out circular curves.
13. Mention the purpose of establishing the horizontal and vertical control points.
14. What are the various corrections applied for the observed angles in the single observation?
15. State the difference between True and Residual errors.
16. What do you understand by Normal equation?
17. State the uses of Eco sounder.
18. What is meant by Photographic surveying?
19. State the uses of Remote sensing techniques pertaining to preliminary investigations Tunnelling operations.
20. Mention the two main sources of errors in Total station survey.

PART C (5 x 14 = 70 Marks)

21. a) (i) Explain in detail, the various stages involved in the setting out a bridge. (8)

(ii) State the various reference grids established in the setting out works of large structures. Explain in detail. (6)

(OR)

b) A reverse curve is to be set out between two parallel tangents 10m apart. The distance between the tangent points measured parallel to the tangents is 80m. If

the radius of the first branch is 150m, calculate the radius of the second branch. Also calculate the lengths of the two branches. What would be the equal radius of the branches of the two reverse curves?

22. a) Discuss in detail, the various steps involved in the Triangulation survey work.

(OR)

b) From a satellite station S, 5.8m from the main triangulation station A, the following directions were observed:

A 0^0 0' 0'' B $132^0$18'30'' C $232^0$24'6'' D $296^0$6'11''

The lengths AB, AC and AD were computed to be 3265.5m, 4022.2 and 3086.4m respectively. Determine the directions of AB,AC and AD

23. a) The following are the three angles A, B and C observed at a station X closing the horizon, with their probable errors of measurement. Determine their corrected values.

A 78^0 12' 10'' ± 2'' B $136^0$48'32''± 3'' C $144^0$59'08''± 5''

(OR)

b) A surveyor carried out leveling of a closed traverse ABCDA starting from A and noted the following:

B was 6.250m above A, weight 2

C was 5.325m above B, weight 3

D was 3.965m above C, weight 2

and D was 15.420m above A, weight 3

Determine the probable heights of B, C and D above A by the method of correlates.

24. a) Explain in detail, the different types of Tide gauges used in Hydrographic surveying.

(OR)

b) State the two methods of measurement of distance using electromagnetic waves. Add a brief note on the various types of EDM instruments.

25. a) What do you understand by underground surveys? Mention the various works involved in mine surveying. Add a note on the various special equipments used for mine surveying.

(OR)

b) Mention the various good practices to be followed in using Total station. Add a note on the advantages of using Total stations over conventional surveying instruments.

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