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| Question Paper Code | 13672 |
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B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Third Semester

Civil Engineering

20CEPC302 - PLANE AND GEODETIC SURVEYING

Regulations - 2020

Duration: 3 Hours

Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

| | Marks | K – Level | CO |
|---|-------|-----------|-----|
| 1. Which instrument is primarily used in chain surveying? (a) Compass (b) Theodolite (c) Chain (d) Plane table | 1 | K1 | CO1 |
| 2. What is the method used for booking and reducing levels? (a) Radiation (b) Collimation (c) Intersection (d) Resection | 1 | K1 | CO2 |
| 3. Which of the following is used in tacheometric surveying? (a) Dumpy level (b) EDM (c) Stadia rod (d) Plane table | 1 | K1 | CO3 |
| 4. What is the principle of a theodolite? (a) Optical centering (b) Traversing (c) Measuring angles (d) Compass surveying | 1 | K1 | CO3 |
| 5. Which method is commonly used for adjustment of survey observations? (a) Simpson's Rule (b) Bowditch Rule (c) Least Squares (d) Plane Table | 1 | K1 | CO4 |
| 6. Which of the following instruments is part of Total Station? (a) Prismatic Compass (b) GPS (c) Digital Theodolite (d) Dumpy Level | 1 | K1 | CO5 |
| 7. Which system component of GPS ensures accuracy? (a) Receiver (b) Satellite (c) Control Segment (d) Antenna | 1 | K1 | CO5 |
| 8. Which curve is used in high-speed rail alignment? (a) Simple Curve (b) Reverse Curve (c) Transition Curve (d) Vertical Curve | 1 | K1 | CO6 |
| 9. Which method is used in hydrographic surveying for determining depth? (a) Intersection (b) Ranging (c) Sounding (d) Tacheometry | 1 | K1 | CO6 |
| 10. Which coordinate system is used in astronomical surveying? (a) Polar (b) Cartesian (c) Celestial (d) Geodetic | 1 | K1 | CO6 |

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

| | | | |
|---|---|----|-----|
| 11. State the basic principles of surveying. | 2 | K1 | CO1 |
| 12. List the different types of surveying. | 2 | K1 | CO1 |
| 13. What are the accessories used in plane table surveying? | 2 | K1 | CO2 |
| 14. Explain curvature and refraction correction. | 2 | K2 | CO2 |
| 15. State the uses of a theodolite in surveying. | 2 | K1 | CO3 |
| 16. List the characteristics of contour lines. | 2 | K1 | CO3 |
| 17. What is triangulation in surveying? | 2 | K1 | CO4 |
| 18. Differentiate between single and reciprocal levelling. | 2 | K2 | CO4 |
| 19. List any two advantages of Total Station. | 2 | K1 | CO5 |
| 20. Mention the types of errors in GPS. | 2 | K1 | CO5 |
| 21. Define reconnaissance survey. | 2 | K1 | CO6 |
| 22. What are the different time systems used in astronomical surveying? | 2 | K1 | CO6 |

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23. a) Discuss in detail the principles and classification of surveying. 11 K2 CO1
- OR**
- b) Explain the different types of errors in chain surveying with examples. 11 K2 CO1
24. a) Describe the various methods of plane table surveying with neat sketches. 11 K2 CO2
- OR**
- b) Explain the temporary and permanent adjustments of a dumpy level. 11 K2 CO2
25. a) Explain the method of measuring horizontal and vertical angles using a theodolite. 11 K2 CO3
- OR**
- b) Discuss the uses of contour maps in civil engineering projects. 11 K2 CO3
26. a) What is triangulation? Explain its classification and layout with suitable diagrams. 11 K2 CO4
- OR**
- b) Describe the process of calculating azimuth and latitude using astronomical observations. 11 K2 CO4
27. a) Explain the components, working and applications of a Total Station. 11 K2 CO5
- OR**
- b) Discuss the errors in GPS surveying and how to minimize them. 11 K2 CO5
28. a) Describe the procedure for setting out transition curves on highways. 11 K2 CO6
- OR**
- b) Explain hydrographic surveying and its significance in marine construction. 11 K2 CO6