JHARKHAND Rai University RANCHI

End Semester /Reappear (Semester IV) Examination May 2025

Programme: Diploma (MiE) **Full Marks: 70**
Course: Mine Surveying II **Time: 3 Hrs.**
Course Code: 8D.252
Enrolment no. _____

Section I

1. **Short Answer type questions. Answer any four.** **4 x 5 = 20**

   a. Explain the procedure of centering of transit theodolite.
   b. Describe the principle involved in Triangulation Survey
   c. Elaborate Weiss quadrilateral method of correlation.
   d. Define GPS and its components.
   e. What is Bowditch method of correcting closing errors? Write the assumptions made in the Bowditch method.
   f. Calculate the degree of curve for a given radius of 20 meter and a chord length of 30 meter.

Section II

Long Answer type questions. Answer any three. **3 x 10 = 30**

2. Discuss the applications of GPS in various fields such as surveying, navigation, agriculture, disaster management, and military operations. Provide examples to support your answer.
3. Describe the components of simple circular curve with neat sketch diagram.
4. Given a curve radius of 1000m and a deflection angle (Delta) of 60°, with a PI chainage of 2000m, determine the curve length, tangent length, mid-ordinate, chord length, apex distance, chainages of T1 and T2, and the degree of curve for a 30m arc length.
5. Explain the different sources of error in theodolite work. What are the personal errors?
6. What is Transition curve? Explain Basic criteria for design of transition curve.

Section III

Application based questions. Answer any one. **1 x 20 = 20**

7. Explain the fundamental working principle of the Global Positioning System (GPS) and describe how satellites, receivers, and signals contribute to determining location.
8. Given two intersecting straight lines at a chainage of 1000.5m with an intersection angle of 60° and a curve radius of 500m, calculate all the elements of the curve.
9. Describe the step-by-step procedure for both temporary and permanent adjustments of a transit theodolite, and explain the importance of these adjustments.

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