GUJARAT TECHNOLOGICAL UNIVERSITY

BE 5 SEMESTER – OLD PAPER – S22 TO W25 – QUESTION BANK

Subject Name & Code: Mine Surveying II - 3152208

Chapter 1: Curve Ranging

Repeated Questions:

1. Definitions, Types and Elements of Curves:

- **Q.** Define curve ranging. Explain direct and indirect method of curve ranging. **(SUMMER 2022; WINTER 2022; SUMMER 2023, 3 Marks; WINTER 2023, 3 Marks; SUMMER 2024, 3 Marks; WINTER 2024, 3 Marks; WINTER 2025, 3 Marks)**
- **Q.** Explain elements of simple curve with neat sketch. [Diagram required – refer to the original question paper] **(WINTER 2022; WINTER 2023, 4 Marks; SUMMER 2024, 4 Marks; WINTER 2024, 4 Marks; SUMMER 2025, 7 Marks)**
- **Q.** Discuss the various types of vertical curve. **(WINTER 2022; SUMMER 2025, 4 Marks; WINTER 2025, 4 Marks)**
- **Q.** Explain various types and uses of Curves. **(SUMMER 2023, 3 Marks; SUMMER 2024, 3 Marks)**
- **Q.** Explain designation of curve. **(SUMMER 2023, 3 Marks OR; SUMMER 2024, 3 Marks OR)**
- **Q.** Define simple curve and compound curve. **(SUMMER 2025, 4 Marks)**

2. Setting Out of Curves (Methods):

- **Q.** Explain the setting out of curve by Rankine method of tangential (deflection) angles. / Explain Rankine's method for circular curve. **(WINTER 2022; SUMMER 2023, 7 Marks; WINTER 2023, 7 Marks)**
- **Q.** Explain the setting out of curve by successive bisection of chords. **(WINTER 2022; WINTER 2025, 7 Marks)**
- **Q.** Explain the setting out of curve by tangent and offset methods. **(SUMMER 2022, 7 Marks; WINTER 2024, 7 Marks)**
- **Q.** Explain the setting out of curve by chords and angles. **(SUMMER 2022, 7 Marks OR; WINTER 2024, 7 Marks OR)**
- **Q.** Explain any one linear method to setting out simple curves with neat sketch. [Diagram required – refer to the original question paper] **(WINTER 2023, 7 Marks; SUMMER 2025, 7 Marks)**

Other Important Questions:

1. Definitions, Terms and Problems in Curve Ranging:

- **Q.** Explain the terms with neat sketch: (i) External distance (ii) Deflection angle (iii) Forward tangent (iv) sub-chord. [Diagram required – refer to the original question paper] **(WINTER 2023, 4 Marks)**
- **Q.** Write the definitions with neat sketch. (i) Curve (ii) Simple curve (iii) Compound curve. [Diagram required – refer to the original question paper] **(WINTER 2023, 3 Marks)**
- **Q.** List out the problem faced during curve ranging. **(SUMMER 2025, 4 Marks)**

2. Setting Out of Curves (Methods):

- **Q.** Explain the setting out of curve by deflection angles. **(WINTER 2025, 7 Marks OR)**
- **Q.** Explain the setting out of curve by two theodolite method. **(SUMMER 2024, 7 Marks)**

3. Curve Setting Out (Numerical):

- **Q.** Two tangents intersect at a chainage of 1250.50m having deflection angle of 60°. If the radius of the curve to be laid out is 375m, calculate the Length of the curve, Tangent distance, Length of

the long chord, Apex distance, Mid-ordinate, Degree of curve and Chainage of P.C. and P.T.
(SUMMER 2023, 7 Marks OR)

Chapter 2: Mine Surveying

Repeated Questions:

1. Correlation Survey: Definition and Purpose:

- **Q.** Define correlation survey. Enumerate the different methods of correlation of surface and underground surveys. What should be the accuracy in such surveys? **(SUMMER 2022; WINTER 2022; SUMMER 2023; SUMMER 2024, 7 Marks; WINTER 2024, 3 Marks; WINTER 2025, 3 Marks)**
- **Q.** Discuss the various purposes of correlation surveying in mines. **(SUMMER 2022, 4 Marks OR; WINTER 2022; SUMMER 2023, 4 Marks; SUMMER 2024, 4 Marks; WINTER 2024, 4 Marks; WINTER 2025, 4 Marks)**

2. Correlation Survey: Methods:

- **Q.** Describe briefly the method of correlating surface and underground surveys when two shafts are available. **(SUMMER 2022, 7 Marks; WINTER 2024, 7 Marks; WINTER 2025, 7 Marks)**
- **Q.** Explain the method of magnetic correlation for connecting the surface survey with the survey of underground workings of a mine. What are the drawbacks of these methods? **(SUMMER 2022 (OR); WINTER 2022 (OR); WINTER 2024, 7 Marks OR; WINTER 2025, 7 Marks OR)**
- **Q.** Describe approximate alignment method of correlation survey. Explain the precautions to be taken in work. **(SUMMER 2023, 7 Marks; SUMMER 2024, 7 Marks OR)**

3. Mine Surveying Instruments:

- **Q.** Discuss the construction and various uses of Miner's Dial with neat sketch. [Diagram required – refer to the original question paper] **(SUMMER 2022; WINTER 2022; SUMMER 2023, 7 Marks; WINTER 2023, 7 Marks; SUMMER 2024, 7 Marks OR; WINTER 2024, 7 Marks; WINTER 2025, 7 Marks)**
- **Q.** Explain: Planimeter. **(WINTER 2023, 3 Marks OR; SUMMER 2025, 3 Marks)**
- **Q.** Write a short note on Clinometer. **(WINTER 2023, 4 Marks; SUMMER 2025, 4 Marks OR)**

4. Stope Surveying:

- **Q.** Discuss the purpose of stope surveying. **(SUMMER 2022, 3 Marks; WINTER 2022; SUMMER 2023, 4 Marks OR; WINTER 2023, 3 Marks; WINTER 2024, 3 Marks; WINTER 2025, 3 Marks OR)**
- **Q.** Explain the methods of stope surveying. **(SUMMER 2023, 7 Marks OR; SUMMER 2024, 7 Marks)**
- **Q.** Explain any one method of Stope surveying. **(WINTER 2023, 4 Marks OR; SUMMER 2025, 4 Marks OR)**

Other Important Questions:

1. Correlation Survey: General, Precautions and Accuracy:

- **Q.** What is correlation survey? Why it is carried out in mine surveying? **(WINTER 2023, 3 Marks)**
- **Q.** Write purpose of correlation survey. **(SUMMER 2025, 3 Marks)**
- **Q.** Narrate the necessary precautions and accuracy required in correlation survey? **(WINTER 2023, 4 Marks)**
- **Q.** Explain precautions to be taken during correlation survey. **(SUMMER 2025, 7 Marks OR)**
- **Q.** List out the instruments required during correlations survey. **(WINTER 2023, 3 Marks OR)**

2. Correlation Survey: Procedure and Methods:

- **Q.** Explain procedure for shaft plumbing. **(SUMMER 2024, 4 Marks)**
- **Q.** Explain any one method with a neat sketch of correlation survey. [Diagram required – refer to the original question paper] **(WINTER 2023, 7 Marks OR)**
- **Q.** Explain co-planning method of correlation survey. **(SUMMER 2025, 7 Marks)**
- **Q.** Explain Weisbach triangle method of correlation survey. **(SUMMER 2025, 7 Marks OR)**

3. Mine Surveying Instruments:

- **Q.** Write a note on hanging compass. **(WINTER 2023, 3 Marks)**
- **Q.** Write short note on Miner's Dial. **(SUMMER 2025, 3 Marks OR)**

Chapter 3: Photogrammetry

Repeated Questions:

1. Introduction, Types and Basics of Photogrammetry:

- **Q.** Define photogrammetry with its advantages. **(SUMMER 2022, 3 Marks OR; WINTER 2022 (OR); SUMMER 2023, 3 Marks; WINTER 2023, 3 Marks OR; SUMMER 2024, 3 Marks; WINTER 2024, 3 Marks)**
- **Q.** Differentiate between photographs and map. **(SUMMER 2022; WINTER 2022; SUMMER 2023, 4 Marks; WINTER 2023, 4 Marks OR; SUMMER 2024, 4 Marks OR; WINTER 2024, 4 Marks; WINTER 2025, 4 Marks OR)**
- **Q.** Explain terrestrial photogrammetry. Describe the field work of terrestrial photogrammetry. **(SUMMER 2023, 3 Marks; SUMMER 2024, 3 Marks)**
- **Q.** Explain aerial photogrammetry and its advantages. **(SUMMER 2023, 3 Marks OR; SUMMER 2024, 3 Marks OR)**

2. Aerial Photogrammetry: Stages, Camera and Scale:

- **Q.** Describe the various stages of aerial photogrammetry. **(SUMMER 2022, 3 Marks; WINTER 2022; SUMMER 2023, 4 Marks; SUMMER 2024, 4 Marks OR; WINTER 2024, 3 Marks OR; WINTER 2025, 3 Marks)**
- **Q.** Define aerial camera. Explain the various parts of aerial camera. **(SUMMER 2023, 7 Marks OR; SUMMER 2024, 7 Marks OR)**
- **Q.** Explain the scale of vertical photographs in detail with neat sketch. [Diagram required – refer to the original question paper] **(WINTER 2023, 7 Marks OR; SUMMER 2025, 7 Marks)**
- **Q.** Explain different types camera used in photogrammetry. **(SUMMER 2022, 4 Marks OR; WINTER 2024, 4 Marks OR)**

3. Advantages, Disadvantages and Applications:

- **Q.** Define tilt distortion. Discuss the advantages and disadvantages of photogrammetric mapping. **(SUMMER 2022, 4 Marks; WINTER 2022 (OR); SUMMER 2023, 7 Marks; SUMMER 2024, 7 Marks; WINTER 2024, 4 Marks; WINTER 2025, 4 Marks)**
- **Q.** Discuss the application of photogrammetry in mining industry. **(WINTER 2022 (OR); SUMMER 2023, 4 Marks OR; SUMMER 2024, 4 Marks; WINTER 2025, 7 Marks)**

Other Important Questions:

1. Principles, Types and Items of Photogrammetry:

- **Q.** List out the items used in Photogrammetry. **(WINTER 2023, 4 Marks)**
- **Q.** Explain principle of photogrammetry. **(SUMMER 2025, 4 Marks OR)**
- **Q.** Explain types of photogrammetry. **(SUMMER 2025, 3 Marks)**

Chapter 4: Remote Sensing

Repeated Questions:

1. Remote Sensing:

- **Q.** Define remote sensing. Discuss the basic concepts and components of remote sensing. **(SUMMER 2022, 3 Marks; WINTER 2022; SUMMER 2023, 3 Marks; SUMMER 2024, 3 Marks; WINTER 2024, 3 Marks OR; WINTER 2025, 3 Marks)**
- **Q.** Explain the visual image interpretation in remote sensing. **(SUMMER 2022, 4 Marks; WINTER 2024, 4 Marks OR; WINTER 2025, 4 Marks)**
- **Q.** Discuss the applications of remote sensing in mining. **(SUMMER 2022, 7 Marks OR; WINTER 2024, 7 Marks OR; WINTER 2025, 7 Marks)**
- **Q.** Discuss the applications of remote sensing in mining. **(SUMMER 2023, 4 Marks; SUMMER 2024, 4 Marks - appeared slightly differently in some papers)**

2. GPS and GIS:

- **Q.** Explain the basic functions and advantages of GIS. **(SUMMER 2022, 4 Marks OR; WINTER 2022, 4 Marks; WINTER 2024, 4 Marks OR; WINTER 2025, 4 Marks)**
- **Q.** Explain the basic concepts and principles of GPS. **(SUMMER 2022, 3 Marks OR; WINTER 2022, 3 Marks OR; WINTER 2024, 3 Marks OR; WINTER 2025, 3 Marks)**
- **Q.** Discuss the applications of GPS & GIS in mining industry. **(SUMMER 2022, 7 Marks; WINTER 2022, 7 Marks; WINTER 2024, 7 Marks OR; WINTER 2025, 7 Marks OR)**
- **Q.** Explain the basic concepts and principles of GIS & GPS. **(SUMMER 2023, 7 Marks; SUMMER 2024, 7 Marks)**
- **Q.** Explain basic concept and applications of GPS and GIS in mining industry. **(SUMMER 2025, 7 Marks OR)**

Other Important Questions:

1. Remote Sensing:

- **Q.** Explain Remote sensing with principles and its applicability in mining. **(WINTER 2023, 4 Marks)**
- **Q.** Explain remote sensing with its principle. **(SUMMER 2025, 4 Marks)**

2. GPS and GIS:

- **Q.** Explain Principles and applicability of GPS and GIS in Surveying. **(WINTER 2023, 7 Marks)**
- **Q.** List out merits and demerits of GPS. **(WINTER 2023, 4 Marks OR)**

Chapter 5: Mine Plans and Sections

Repeated Questions:

1. Legal Requirements, Preparation and Preservation of Plans and Sections:

- **Q.** Discuss the legal requirements about mine plans and sections. **(SUMMER 2022, 3 Marks OR; WINTER 2022 (OR); SUMMER 2023, 3 Marks OR; SUMMER 2024, 3 Marks OR; WINTER 2024, 3 Marks; WINTER 2025, 3 Marks OR)**
- **Q.** Explain the procedure of preparation and preservation of mine plans and sections. **(SUMMER 2022, 4 Marks; WINTER 2022; WINTER 2024, 4 Marks; WINTER 2025, 4 Marks OR)**

2. Mine Models and Conventional Symbols:

- **Q.** Explain the different types of mine models. **(SUMMER 2022, 7 Marks; WINTER 2022; SUMMER 2023, 7 Marks OR; WINTER 2023, 7 Marks OR; SUMMER 2024, 7 Marks OR; WINTER 2024, 7 Marks; WINTER 2025, 7 Marks OR)**
- **Q.** Explain the symbols used for preparation of mine plans and sections. **(SUMMER 2023, 4 Marks OR; SUMMER 2024, 4 Marks OR)**
- **Q.** Draw any seven convention symbol with detail used for the preparation of mine plans. [Diagram required – refer to the original question paper] **(SUMMER 2022, 7 Marks OR; WINTER 2023, 7 Marks OR; WINTER 2024, 7 Marks; SUMMER 2025, 7 Marks)**

Other Important Questions:

1. Preparation, Preservation and Storage of Plans and Sections:

- **Q.** Write the steps for preparation and preserve plan and section as per legal requirements. **(WINTER 2023, 7 Marks)**
- **Q.** Write the provisions for the storage of plan and section as per regulations. **(SUMMER 2025, 3 Marks)**

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