

**DETAILED SYLLABUS FOR THE POST OF (DRAFTSMAN CUM  
SURVEYOR IN MINING AND GEOLOGY**

**(Cat.No.: 293/2021)**

**Module 1: Basic Engineering Drawing (10 Marks)**

Types of lines, Method of Dimensioning, Triangles and their types, Quadrilaterals and their properties, Polygon and their properties, Circles

Types of scales – Plain Scale, Diagonal Scale, Comparative scale, Vernier scale, Scale of chords

Projection of points and lines

Projection - orthographic views of prisms, cylinder, pyramids, cone, Frustum of cone and sphere

Isometric projection, Isometric scale

**Module 2: Chain Surveying (15 Marks)**

Measurement of distance by a chain and chaining, Introduction about chain survey instruments

Testing of metric chain (20m/30m), Ranging, Offsets and offsetting, Field book, Obstacles in chain surveying, Chaining on sloping ground, Chain survey to an open land for layout plots, Calculation of area, Preparing site plan, Chain and compass traversing, Units and Measurements

**Module 3: Levelling (15 Marks)**

Terms used in levelling, Principle of levelling - Auto level - Dumpy level- Tilting level , Levelling staff - Its Graduation & Type , Holding of levelling staff - Temporary adjustments, Permanent adjustments, Level field book, Problems on levelling , Types of levelling , Fly levelling & check levelling , Problem on reduced levels, Reciprocal levelling , Longitudinal sectioning and cross sectioning , Errors in levelling and its arithmetical checks

**Module 4: Contour survey (10 Marks)**

Introduction to contouring, Characteristics of contours, Uses of contours, Methods of contouring, Indirect method of contouring, Interpolation of contour and drawing, Locating contour gradient, Contour map, Tracing of grade of contour, Establishment of gradient by ABNEY level, boning rod and sight rail, Problems on computation of earth work, Topography map with contour

**Module 5: Total station (7 Marks)**

Introduction to total station, Types of total station, Measurement with total station

Characteristics and features of Total station, Principle of EDM - Working need setting and measurement, Setting and measurements, Total Station Prism-Instrument error operation

Electronic Display & Data recording, Rectangular and Polar Co-ordinate System

Termmology of open and closed traverse

**Module 6: Road project in survey**

**(10 Marks)**

Principles of road alignment and classification of roads, Reconnaissance survey in road project

Compass traverse and preparations of drawing, plane table survey

Computation of earth work in embankment and cutting, Preparation of topographic map

Preparation of cadastral map, Open traversing, Use auto cad command survey software for survey drawing

**Module 7: Cadastral survey**

**(5 Marks)**

Preliminary knowledge for prepare a site plan, Digital planimeter

**Module 8: Computer aided drafting**

**(10 Marks)**

Introduction of CAD, Computer aided drafting and designs

Graphical user interface (GUI), Practice on auto CAD, CAD basics

Basic commands, Other CAD commands

Text and dimensions, Printing and plotting, Layers, Properties and blocks, Isoplane

**Module 9: Global positioning systems**

**(8 Marks)**

Introduction of GPS System, Satellite and Conventional Geodetic system

GPS co-ordinate system & components of the GPS system & Segments

GPS Segments, Principle of operation of GPS & surveying with GPS

**Module 10: Estimating & Costing**

**(10 Marks)**

Estimation - Purpose - Technical Terms - Datas and Classification

Rules measurement of Techniques, Rate analysis - labour - materials - schedule of rates

Valuation - Terms – Evaluation, Specification

**NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.**