

**SYLLABUS FOR THE WRITEN EXAMINATION' FOR THE POST OF  
DY SURVEYOR ( MINING) - T&S - GRADE- "C " AT SECL BILASPUR**

**(1) Linear Measurement :-**

Instrument for measuring distance; ranging; chain surveying; errors in chaining and plotting; optical square.

**(2) Angular measurement:-**

Prismatic compass; bearing of lines; local attraction; magnetic declination.

**(3) EDM:**

Principles of measurement; types; corrections; selection of instrument.

**(4) Plane Table Surveying :-**

Plane Table Surveying methods, contouring using plane table and micro-optic alidade.

**(5) Theodolite:-**

Modern micro-optic theodolites; measurement of horizontal and vertical angles; theodolite traversing; traverse calculation; computation of oordinates; adjustment of traverse; temporary and permanent adjustment.

**(6) Levelling :-**

**(a)** Levelling instrument; types of levelling; booking and reduction methods; temporary and permanent adjustment of level; geometrical, trigonometric and physical levelling; characteristics and uses of contours; methods of contouring; traverse; co-ordinates and levelling problems.

**(b)** Tachometry.

Principle of methods of tachometry Instruments used and accuracy .

**(7) Controlled survey:-**

Triangulation; application of GPS and Total Station in mine surveying.

**(8) Use, care, testing, and adjustments of instruments.**

**(9) Field astronomy :-**

Field astronomy: Astronomical terms; determination of true bearing by equal altitude method; Gyro theodolite; principle and determination of Gyro north, astronomical triangle; conversion of time systems and precise determination of azimuth by astronomical methods.

**(10). National grid:**

National grid: Map projection vertical projections; mine models.

  
24/2/16

**(11) Geodesy:**

Geod, spheroid and ellipsoid, geocentric; geodetic and astronomical coordinates; orthometric and dynamic height.

**(12). Photogrammetry:-**

Introduction; Scale of a vertical photograph, photographs versus maps, application of photogrammetry and remote sensing in mining. Correlation: Methods of correlation surface and underground including Gyro-Laser combination.

**(13) Theory of errors and adjustments:-**

Theory of errors and adjustments: Causes and classification of errors; indices of precision; laws of weight; propagation and adjustment of errors; adjustment of triangulation figures.

**(14)** Survey of flat, moderately and steeply inclined and vertical workings; control of direction and gradient in drifts and roadways; traversing along steep working with or without auxiliary telescopes.

**(15) Area and volume calculation;-**

Area and volume calculation; different methods and their limitations; earthwork and building estimation; laying out of rail curves on surface and underground; measurements of depths of incline roadways and shafts; determination of azimuth, latitude and longitude.

**(16)** Subsidence Survey over depillaring panel & Slope stability monitoring in OC Mines.

**(17) Dip Strike and fault problems :-**

Borehole surveying and calculations; dip, strike, outcrop and fault problems.

**(18) Plans & Legislation as per CMR 1957 :-**

Types of plans; their preparation, care, storage and preservation; legislation concerning mine plans and sections under Coal Mines regulation 1957, Geological map reading, duties and responsibilities of surveyors.

**(19) Application of Computers in Mine Surveying :-**

Application of computers in mine surveying and preparation of mine plans, Volume calculation with the help of Survey & Mapping software.

  
General Manager (Prodn)

SECL , Bilaspur

  
24/2/16