

## GROUP-54

### Surveyor (Level of Exam- Matric+ ITI Diploma in Surveying)

1) General awareness, Reasoning, Mathematics, Science, History including Haryana related history, current affairs, literature, Geography, Civics, Environment, Culture etc. -

(Weightage 20%)

2) Computer terminology, Fundamentals, word software, excel software, Power point, internet, web browsing, Communication, emails, downloading and uploading data on websites etc. -

(Weightage 10%)

3) Subject related syllabus-

(Weightage 70%)

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#### Surveying Trade Theory

Importance of safety, general safety precautions-Introduction to Trade. Uses of different instruments & equipment's used by Surveyor, their types and uses. Lettering using stencils.Scales-different types, principles.Geometrical construction-lines, angles, triangles, quadrilaterals and circles.Classification of survey. Accuracy and speed in field & office work. Common terms used and definitions. Conventional signs and symbols. Use of legends.Linear measuring instruments, their description & uses. Types of chain.Principles of chain survey. Instruments used & their description.Field book-types, methods of entry of check lines-its importance.Types of offsets and their limit, town survey traversing with chain, procedure in plotting.Care & maintenance of chain & accessories. Types of obstacles in chaining and methods of overcoming them.Errors in chain survey & their remedies, problems in chain survey, degree of accuracy required procedure of inking & colouring.Use of magnetic needles in survey, types of compasses, description, constructional features & uses of compasses, their adjustments, Measurement of directions.Technical terms used in compass survey, difference between angles & bearings, magnetic & true meridians, declination and its variations, local attraction, its detection & elimination.Locating details by bearings, compass survey methods, traversing methods, methods of determining true meridians & declination, methods of plotting closed compass traverseadjustment of closing errors, limits of precision required, field book entries.Relaying of old service errors in compass survey. Testing & adjustment of compass.Plane table survey-merits & demerits, equipment used, methods of plane tabling.Errors in plane tabling & their elimination-other instruments used in combination with plane table, their construction & uses.Tangent clinometers, Dole sole's clinometers & telescopic alidade.Survey maps-care & maintenance of plane table accessories, procedure of plane tabling.

Levelling-parts, types-Cooks reversible level & dumpy level, types of diaphragms, types of staff, technical terms used in levelling, permanent adjustment of levelling instruments.Methods of observation, booking, reduction of levels, types of field book, reciprocal levelling, effects of Earth's curvature & refraction in levelling, common errors and their elimination, degree of accuracy, introduction to contour.Working out problems on field book reduction, reciprocal levelling& permanent adjustments.Purpose of sectioning, consideration of distance between points, precautions.Steps in plotting sections, selection of scales, factors affecting selection of formation level- Prismoid formula & its application, calculation of earthwork.Construction and use of boning rods and ghat tracer.Types of surveys for the location of a road, points to be considered during reconnaissance, preliminary & final location surveys. Alignment of roads, relative importance of length of road, height of embankment and depth of cutting, road gradients, sub-grades, road foundations, drainage, camber, curves and super elevation, road surfaces such as earth road, WBM road cement concrete road bituminous road, etc.Introduction to theodolite, temporary adjustments, procedure in setting up, methods of measurement of horizontal angles, repetition & reiteration systems.Types of field book used in theodolite survey, adjustment of errors while laying a given angle by repetition, method of setting out straight lines, establishing lines at given angles with given lines.Instrumental errors, their elimination, permanent adjustment, care & maintenance of theodolite. Method of running a traverse, different methods of measuring angles and bearings.Methods of plotting traverses- Gales traverse system, checking of measurements of closed & open traverse, use of traverse tables, closing errors & its adjustment. Omitted measurements and their calculation-Practice in working out problems. Technical terms in connection with simple triangulation-base line measurements& its correction procedure of measuring angles-methods of calculating sides from triangulation, data check, errors & precautions.

### **Syllabus for Workshop Calculation & Science**

Addition & subtraction of decimal numbers and fractions, Multiplication & division of decimal numbers and fractions. Conversion of decimals into fractions and vice versa, Algebra-fundamental formulae, multiplication and factorization, Simple equations & simultaneous equations, Simple theory of indices, Surds, Quadratic equations & applications, Linear graph, Use of Logarithm tables, Properties of plane geometrical figures-triangles, rectangles & quadrilaterals, Properties of regular polygons, circles & parallelograms, Determination of sides & area of triangles, quadrilaterals & polygons, Revision & Examination, Determination of area of circles, sectors and segments, Simpson's Rule, Units of length, area & volume and their conversion, Surface area and volume of cubes and cuboids, Surface area and volume of spheres, Surface area and volume of cylinders, Surface area and volume of prisms. Prismoid formula. 10 Surface area and volume of cones, Introduction to Trigonometry. Basic ratios such as  $\sin \theta$ ,  $\cos \theta$ ,  $\tan \theta$  and their reciprocals, Solution of simple triangles, Use of trigonometrical tables, Problems on heights & distances, More problems on mensuration, More problems on trigonometry, Revision & Examination

**Important Note: The Weightage as mentioned against the syllabus is tentative & may vary.**