Syllabus for the post of Workman Trainee Surveyor
(Total Marks 100)

PART A (80 marks)

1. Introduction:

2. Introduction of surveying, types of surveying, use, application principal, Knowledge of different types of scales, determine of R.F & uses of scales. Different types of projection views orthographic, sectional, isometric view. Use & application of conventional signs & symbols. Basic Knowledge of different types measurement units used in survey works.

1. **Chain Survey**: Uses of Chain/tape, testing of a chain & correction, Ranging (direct indirect), Principle of chain survey, application, Terms used in chain survey, Offset, types of offsets, limit of offset, field book, types of field book, entry of field book method of chaining in slopping ground, Field procedure of chain survey errors in chain survey, plotting procedure, Calculation of area (regular& irregular figure) Knowledge of site plan.

2. **Compass Survey**: Basic terms used in compass survey, Instrument& it setting up, Conversion of bearing web to R.B., Calculation of included angle from bearing local attraction, magnetic declination and true bearing, closing error. Adjustment of closing error, precaution in using prismatic compass.

3. **Plane table survey:** principles, merits & demerits Instrument used in plane table survey setting up the plane table. (centering, levelling, orientation), Methods of plane table survey (radiation, intersection, section, traversing), Traversing using the theodolite (closed &open), traverse computation, determination of consecutive coordinates, independent co-ordinate, checking & balancing of traverse, preparation of gales traverse table, computation of area using co-ordinates, calculation of omitted measurement.

4. **Levelling:** Introduction to levelling, Types of levelling instruments, Technical terms used in levelling, Temporary &permanent adjustment, Different types of levelling Entry of level book (Reduced level calculation method) Curvature & refraction effect sensitivity of bubble tube. Common error and their elimination. Degree of accuracy.

5. **Tachometry:** Introduction of tachometry & terms use advantages and disadvantages, Tachometric constants & its determination.

Determination of horizontal & vertical distances by various methods.

6. **Contouring:** contour interval selection of contour interval, characteristics of contour, uses of contour contouring by various method. Interpolation of contour by various methods, drawing of contours, computation of volume establishment of gradient by Abney level.

7. **Curves, Purpose, Types of curves**—simple, compound, reverse, transition, vertical. Elements of simple curve, computation of elements of simple curve. Various methods for setting out simple, compound, reverse, transition& vertical curve.

8. **Modern survey instruments**: Parts of Total station, temporary adjustment of T.S, working procedure of T.S.

9. **Cadastral survey**: Cadastral map, term used in cadastral survey, preliminary knowledge for prepare a site plan. Calculation of area by digital planimeter.

10. **Topographical Map: Details** knowledge for preparation of topographical map to map the terrain and surface features of the project area, including rivers, mountains, and valleys. Details knowledge for preparation of cadastral map. Details knowledge for preparation of layout plan of Civil Engineering projects. Importance of cartographic projection. Uses of various types of cartographic projection for mapping. Details knowledge for preparation of a road project.

11. **Application of Software**: Application of Computers & Software in Surveying for generation of Topographical plan, Contour, cross section etc. (such as AutoCAD, LISCAD etc.) Introduction of GIS& GPS. Elements of GPS/DGPS. Observation principles. Sources of error & handling of error in GPS. Various type of GPS application.

12. **Hydrographic survey**: use, practice various methods of water depth measurement process, flow velocity measurement & determination of cross- sectional area of river. Handling of echosounder, current meter. Basic terms used in transmission line survey, justification criteria for constructing new line, marking process of tentative alignment, selection process of a good alignment. Process of detail survey & final location survey. Use of sag template, Various type of tower, construction of tower foundation.

PART-B (20 marks)

- Logical Reasoning (5 questions),
- Quantitative Aptitude (5 questions),
- English (5 questions)
- General Knowledge/ Awareness (5 questions)