

## ANNEXURE Q

### Syllabus for Written test

**Marks =120**

**120 Minutes**

#### **UNIT 1**

**25 marks**

- i. Drawing is a language of technicians. Drawing office organization. Drawing instruments, equipment's materials their use, care & maintenance, safety precautions. Introduction to BIS code of practice and Architectural drawings.
- ii. Importance of lettering, printing of letters and figures sizes, proportion etc. as per BIS code.
- iii. Forms and proportions for single stroke lettering, Lettering stencils.
- iv. Geometrical drawing. Definitions, construction of plain geometrical figures. Orthographic projection, dihedral angles and recommended methods of projection according to B.I.S codes.
- v. Principles, representation and construction of different types of scales, graphic scales, recommended scales for drawing with reference to BIS codes.
- vi. Dimensioning technique, order of finishing, technical, Sketching, technique of sketching model drawing, orthographic sketching etc.
- vii. Conventional signs and symbols as per B.I. S. Bricks characteristics of good bricks, hollow bricks and manufacture of bricks.
- viii. Tiles, terracotta, stone ware and earthen ware, sand types, characteristics, cement, lime.

#### **UNIT 2**

**30 marks**

- i. Sequence of construction of a building. Names of different parts of building. Bricks masonry- principles of construction of bonds. Tools and equipment used. Scaffolding.
- ii. Stone masonry, terms used, principles of construction, classification, composite masonry and strength of walls. Timber: Structure- Indian timber uses.
- iii. Foundation: Purpose, causes of failure of foundation, bearing capacity of soils, dead and live loads, examination of ground. Types of foundation. Drawing of footing foundation, setting out of building on ground excavation, shorting & simple machine foundations.
- iv. Dampness in building and damp proof course. Method of prevention of dampness in building. Mortar-types, proportion & mixing. Plastering & pointing. White washing & distempering.
- v. Types of ground floor and methods of constructing granolithic, mosaic, brick tiles etc. floors.
- vi. Arches-technical terms forms –brick and stone centering lintel. Market forms and sizes.
- vii. Carpentry joints-terms, Classification of joints.
- viii. Door- parts of door, location, sizes, and types.

- ix. Windows and ventilators including steel window and ventilators fixtures and fastenings used in doors. Window and ventilators.
- x. Roof-Pitched roof types, roof covering, component parts of roof. Theory of trussing king and queen post trusses.
- xi. Classification and construction of upper floors including waterproofing, general Principles of construction of masonry & R. C.C
- xii. Stairs: Terms, forms, materials planning and designing of Stairs. Details of construction.
- xiii. Residential building. Principles of planning. Orientation-local building by law as including BIS code, type of residential building rooms, services, utilities which constitute as dwelling house. Estimating.
- xiv. Method and find out quantities for a single storied residential building.
- xv. Perspective view types. Method of construction, technique of colouring and shading.
- xvi. Inking & tracing, operating of Leroy set & care of its accessories. Method of preparing Blue prints or Ammonia Prints, Folding of prints.
- xvii. Safety precaution& elementary first aid, forge and fuel. Lighting fire Common had tools-their description and use. Description of plumbing operations.
- xviii. Safety precautions & elementary first aid- carpenter's hand tools, their names, description and use. Common joints. Use of nails, screws hinges, dowels etc. preparation of glue & putty, Grinding & sharpening of tools. Their care & maintenance. Use of different types of joints. Properties and uses of different timbers used in construction work.
- xix. Safety precautions and elementary first aid. Artificial respiration and treatment of electrical Shock. Elementary electricity. General idea of supply system. Wireman's tool kits. Wiring materials. Electric fittings. System of wiring. Wiring installation for domestic lighting.

### **UNIT 3**

**25 marks**

- i. Tools their description, uses and their care.
- ii. Details of different bonding wall and section according to BIS
- iii. Introduction:- Chain surveying principles, Instruments employed, use, care & maintenance. Field problems. Field book plotting. Introduction to plane table survey, Instruments employed, use, care & maintenance. Prismatic compass. Planimeter and pentagraph.
- iv. Instruments and accessories- their uses and description level book. Differential leveling. Application of chain and leveling to building construction. Plotting, preparation of contour computing earth work by spot level and contours. Setting out work.
- v. Road:-Introduction to roads, general principles of alignment . classification and construction of different types of roads.
- vi. Indian railways-their gauges, construction of permanent ways . Different ail sections. Use of stone blasts in railways track. Use and types of slippers, types of

signals, fixtures & fastening in Railway Tracks including base plates and fishplates.

- vii. Bridges: - Introduction to bridges, component parts of a bridge. Classification of culverts (I.R.C.)
- viii. Bridges– types, location of bridge. Tunnels rules used for the sizes of different members.

#### **UNIT 4**

**20 marks**

- i. Definition of terms used in irrigation.
- ii. Hydrology like duty delta, intensity of irrigation, Hydrograph, peak flow, runs off, catchments area CCA, corps like, Rabi, Kharif etc.
- iii. Storage/ diversion head works definitions:
- iv. Types of Dam –Masonry, concrete & composite Dams
- v. Gravity Dam, Arch and Buttress Dams, Earth and Rock fill dams.
- vi. Reservoir- types of Reservoirs viz. single purpose and multi-purpose, area/ capacity curves of Reservoir.
- vii. Canals- Canals, classification of canals and distribution system, canal structures viz. Head Regulators, Cross Regulators, Canal outlet, Escape etc, drawing of canal alignment including longitudinal and cross sections of canals with the given data.
- viii. Type of cross drainage Works viz. Aqueducts. Super passage, level crossing, Irrigation , culvert- Inlets and Outlets, General Description , Element of water power development and various civil engineering structure of Hydro Electric Schemes, i. e., fore bay. Penstock, Turbines, Power House etc.
- ix. Introduction–terms used in public health engineering system of sanitation-house plumbing, sanitary fitting etc. Types of supply system and purification of water.
- x. Introduction to RCC uses, materials proportions and form work, including bending of bars and construction reference to BIS code Reinforced brickwork.
- xi. Materials used for RCC, construction selection of materials coarse aggregate, fine aggregate cement – water, reinforcement, characteristics. Method of Mixing concrete- hand and machine, slump test.
- xii. Forms of rivets, proportions. Types of riveted joints.
- xiii. Design of Riveted connection, failure of riveted joints.

#### **UNIT 5**

**20 marks**

- i. Types of estimate, standard method of taking out quantity, Labour & material detailed & abstract estimate. Analysis of rates for simple items of work. Schedule of rates, specifications.
- ii.
- iii. Residential building, planning of building, local by –laws including BIS code Types of residential building rooms, service utilities which constitute a dwelling house. Building by –laws of State urban Development authorities, Improvement trust etc.

- iv. What is a Computer- General terms used in computer.
- v. Elementary DOS commands.
- vi. Window command and their uses
- vii. Auto CAD commands and use of different Icons of Auto CAD
- viii. Knowledge about different co-ordinate systems
- ix. Knowledge about 3d Drafting
- x. Knowledge about Architectural Desk top and creating modeling.

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