

L_All_Vocational_Ed_Construction

Sector: Construction

Sr. No	Specialisation	Page No
1	Construction and Building Technology	02

VOCATIONAL EDUCATIONAL QUALIFICATION FRAMEWORK
(Sector - Construction and Building Technology)

S.No.	Certificate Level	Vocational Hours
1.	Level-I	200 hrs
2.	Level-II	250 hrs
3.	Level-III	350 hrs
4.	Level-IV	350 hrs
5.	Level-V	500 hrs
6.	Level-VI	550 hrs
7.	Level-VII	750 hrs

Certificate Level I

i. Infrastructure

- Infrastructure - components
- *Rural Infrastructure* and Urban Infrastructure
- Infrastructure in India

ii. Masonry

- Technical terms
- Tools & Uses
- Construction materials
- Building components
- Mortar and concrete
- curing
- Safety measures

iii. Bar bending

- Technical terms
- Tools & uses
- Types of steels
- Ties and bending methods
- Slab reinforcement - one way slab and Two way slab

iv. Plumbing & Sanitation

- Technical terms , necessity
- Advantages and Disadvantages
- Basic materials for Plumbing and Sanitation

v. Painting

- Technical terms , necessity
- Basics of White washing, Colour washing and painting

vi. Soft skills

Certificate Level II

i. Infra structure

- Infrastructure Development - an overview
- Infra structure development in India
- Infrastructure Management

ii. Masonry

- Setting and marking
- Transfer of levels
- Brick masonry and types
- Quantity estimation of different components of single room buildings
- curing and curing methods
- Safety measures

iii. Bar bending

- Slab reinforcement -revision
- Lintel and sunshade reinforcement
- Column and footing reinforcement
- Reinforcement for beams

iv. Plumbing & Sanitation

- Basic materials for Plumbing and Sanitation
- GI Pipe marking, cutting threading, jointing
- PVC -Pipe marking, cutting threading, jointing

v. Welding

- Fundamentals
- fundamentals , safety measures

vi. Roads

- fundamental/classification of roads, cross drainage works

Certificate Level III

- i. Infrastructure**
 - Infrastructure investment, Economic growth, Poverty alleviation
 - Infrastructure sector wise growths
 - Deficiency of infra sector in India

- ii. Masonry**
 - Stone masonry
 - Fixing of doors and windows
 - Plastering and pointing
 - Quantity estimation of Two bed room house
 - Safety measures

- iii. Bar bending**
 - Reinforcements for Columns & footings, one way slabs and two slabs & beams - revision
 - Reinforcement for Staircase

- iv. Plumbing and Sanitation**
 - Building Services, sump, principal of overhead tank, types of valves and uses
 - Water meter connection
 - Water closets, urinals, flush tank
 - Septic tank and soak pits
 - Solid Waste and Liquid Waste - Recycling and Reuse

- v. form work**
 - formwork- material
 - importance of form formwork

- vi. Electrical House wiring**
 - Electrical Graphical symbols and signs
 - Do & Don'ts in electric field
 - Types of wires used in wiring
 - systems of wiring
 - ISI rules for house wiring
 - fixing of sockets and switches
 - types of Electric circuits and connections(Lights and Fans)
 - Electrical measuring equipments
 - Safety Measures

- vii. Roads**
 - Types of Roads

- viii. Green Building Technology**
 - Renewable energy, non-Renewable energy and Green building technologies
- ix. Soft skills**

Certificate Level IV

i. Infrastructure

- Urbanisation and Economic growth in India
- Basics of financing infrastructure

ii. Electrical house wiring

- AC Single phase motor
- AC Three phase motor
- Connection of single phase motor with suitable motors
- Connection of three phase motors with DOL starter
- Submersible pumps
- Transformers -types and working principles
- Visit to substation s- 11KV and 33 KV
- safety measures

iii. Painting

- Types of paints
- Preparation of surface
- Wall lapum ,Wall painting
- Wood surface polishing , varnishing

iv. Assistant works supervisor

- Measurement length, Width, depth in MKS, FPS system
- Menstruation - area, Volumes of different shapes
- Drawing - conventional symbols
- Drawing by Manual or AutoCAD
- Reading of drawing - Plan, Elevation, cross section, different elements
- Surveying - Leveling
- Roads -Types
- Bridges - Components
- Stores- Receipts and issues
- Site visit
- safety measures

v. Welding

- types ,safety measures

vi. Renewable energy

- Solar energy and wind energy

vii. Basics of Interiors

viii. Soft skills

Certificate Level V

- I Engineering Drawing
- ii. Methods of surveying
- iii. Any one Building Construction or Road or Culverts / Minor Bridges
 - Building Construction
 - Soil investigation
 - Building drawing
 - Sub structure
 - Superstructure
 - Floorings, finishing etc. estimation
 - Construction materials and tests Equipment
 - Workmanship

Roads

Soil investigation, Design of Roads: Highways (Flexible and Rigid) and rural Roads
High embankments and Retaining walls
Construction and maintenance of Roads
Construction materials and tests
Quantity Estimation
Conducting test for material
Equipment, workmanship

Culverts /Minor Bridges

Selection of site, Hydraulic data
Soil investigation
Sub structure
Superstructure
Construction materials and tests
Quantity Estimation
Construction
Equipment, Workmanship

Certificate Level VI

- i. **Surveying**
- ii. **Any one - Building Construction or Roads or Culverts / Minor Bridges**
other than already studied in level 5
- iii. **Cross Drainage Works**
Cross Drainage Works for Roads
- iv. **AutoCAD 1**

Building Construction

Soil investigation
Building drawing
Sub structure
Superstructure
Floorings, finishing etc. estimation
Construction materials and tests Equipment
Workmanship

Roads

Soil investigation, Design of Roads: Highways (Flexible and Rigid) and rural Roads
High embankments and Retaining walls
Construction and maintenance of Roads
Construction materials and tests
Quantity Estimation
Conducting test for material
Equipment, workmanship

Culverts /Minor Bridges

Selection of site, Hydraulic data
Soil investigation
Sub structure
Superstructure
Construction materials and tests
Quantity Estimation
Construction
Equipment, Workmanship

Certificate Level VII

- i. Surveying
- ii. Auto CAD 2
- iii. Any subject or combination of the following subjects totaling 600 or more hrs
 - a) **Any one**
Building Construction or Roads or Culverts /Minor Bridges other than already studied in level 5 or level 6
 - b) **Major bridges**
Including Alignment and Geometry
Soil investigation
Scaffolding and Form work
Sub structure
Superstructure
Construction materials and tests
Quantity Estimation
Study of bearings

Construction, Load test
Equipment, Workmanship

c) **Steel structures**

Fundamentals of design of steel structures : merits and demerits , loads, structural sections
Joints: Bolts, Rivets, Welded joints
Column bases,
Columns
Beams
Trusses – construction

d) **Pre-stressed bridges**

Materials used and their properties-concrete, high strength steel-Specifications I.S. Code provisions-Losses in pre stressing.
Cable profile – Anchorage Zones.
Construction / Methods of pre stressing and observation
Equipment, workmanship
Conducting tests for materials and Load tests
Materials used and their properties-concrete, high strength steel-Specifications I.S. Code provisions-Losses in pre stressing.

e) **Water supply**

Sources of water
Water demand
Quality of water and testing
Water supply system: collection and treatment, conveyance and distribution
Systems of supply
Water sump and Over head tank etc.

f) **Sanitary Engineering**

Sewage
Systems of sewage disposals
Types of Sewers and Appurtenances
Methods of disposal of solid wastes and sanitation, Sewage treatment plants
Construction
Rural sanitation

g) **Irrigation structures**

Earthen Dams: selection of site, ayacut assessment
Types of Earthen Dams, Methods of Construction, Causes of failure, Design Criteria, selecting a suitable preliminary section for an earthen Dam, Determination of line of seepage or phreatic line in Earthen Dam , stability of u/s and d/s slopes, seepage control in Earthen Dam, Design of filters, slope protection
Hydraulic structures for canals:

Canal falls – necessity, locations, various types and description of each type, Head regulator, sluices and cross regulator- location, construction

h) **Repairs and Rehabilitation of buildings**

Causes of deterioration

Evaluation Tests

Construction Chemicals

Specification For execution of Repairs

Techniques for repairs of Rehabilitation

i) **Repairs and Rehabilitation of Bridges**

Causes of deterioration

Evaluation Tests

Construction Chemicals

Specification For execution of Repairs

Techniques for repairs of Rehabilitation