

**ASSISTANT SUPERVISOR - ESTIMATING & MATERIAL TESTING FOR CIVIL
CONSTRUCTION (SEMT)**

Core Qualification File Syllabus

| Duration – Theory - 72 hours & Practical – 96 hours | | |
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| Sl No. | Trade Theory | Trade Practical |
| 1. | Estimate of Land & Building: (12 hrs) 1. Introduction, 2. Purpose and common techniques of estimate. 3. Civil Engineering Drawing , 4. Measurement techniques 5. Estimate - necessity, importance, types- approximate and detailed estimate - main and sub estimates, revised, supplementary, maintenance / repair estimate-taking off quantities - method 6. Brief details of method of Estimating, Calculation of Plinth Area, Covered Area, Carpet Area, Service Area, Floor area, 7. Detail estimate of (i) a Wall with uniform spread footing, (ii) a Boundary Wall with eccentric footing, (iii) a single storied Building, (iv) a Septic Tank, (v) Semi-underground Water Reservoir, | Demonstrate the : (18 hrs) 1. Concept and purpose of estimate for different Civil construction work. 2. Concept and calculation of Plinth Area, Covered Area, Carpet Area, Service Area, Floor area, 3. Approximate Methods of Estimating for Building Plinth area or square meter method, Cubic rate or cubic metre method, Approximate quantities with bill method, Service unit or Unit rate method, Bay method Cost comparison method Cost from materials and labour. 4. Prepare Detailed Estimate of Items of - i) a Wall with uniform spread footing, ii) a boundary wall with eccentric footing, iii) a single storied Building, iv) a Septic Tank, v) Semi-underground water reservoir |
| 2. | Estimate for quantity of material required to construct the following item of works for a building: (12 hrs) a) Earth work in excavation, b) Brick flat soling, c) Plain Cement concrete. d) Brick work with cement mortar, | Prepare the Estimate for quantity of materials required to construct the following item of works for a building : (18 hrs) a) Earth work in excavation, b) Brick flat soling, c) Plain Cement concrete. d) Brick work with cement mortar, |

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| | e) Plastering. f) RCC work g) Wood work calculation, h) Painting. | e) Plastering. f) RCC work g) Wood work calculation, h) Painting. |
| 3. | Rate analysis of typical items and their specification Labour and materials. Govt. Schedule of Rate. (12 hrs) | Prepare rate analysis of major items - Earth Work, Brick Flat Soling, RCC, PCC, Wood Work, Stone & Brick masonry, Different Flooring , Plastering & Painting. (18 hrs) |
| 4 | Booking of item of work in measurement book. (8 hrs) | Prepare the Booking of different item of works in measurement book according to sequence. (10 hrs) |
| 5 | Tendering & Tender Documents, Contract & its types. (8 hrs) | Demonstrate: Tendering & Tender Documents, Contract & its types. |
| 6 | Testing of different construction materials - Bricks, Sand, Cement, Stone chips, Water, concrete. (12 hrs) | Testing of (20 hrs) i) Bricks- Shape, size, colour, soundness, efflorescence, crushing strength, class. ii) Sand (Fine aggregate)- grading zone, fineness modulus, bulking of sand, silt content . iii) Cement-fineness, soundness, initial and final setting time, compressive strength of cement sand mortar. iv) Stone chips (Coarse aggregate)- grading, crushing strength, flakiness and elongation index, v) Concrete- Workability(slump test, compacting factor test), Compressive strength of concrete. vi) Water-Turbidity, colour, odour, PH |
| 7 | Project work : (8 hrs) 1. Describe the method of measurement of a finished work. 2. Study of drawing to prepare an estimate of a two storied residential building having two flat per floor of 200 sq.m. covered area per floor. 3. Describe the specification of Physical testing of different construction materials. | Project Work : (12 hrs) 1. Prepare a measurement of a finished work. 2. Estimate of a two storied residential building having two flat of 200 sq.m. covered area per floor according to detailed drawing. (Estimate of items of work, Bill of materials and cost involved as per P.W.D. Rate.) 3. Physical testing of different construction materials - Bricks, Sand, Cement, Stone chips, Steel, Water, |

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| | | Wood etc. |
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OUTCOMES

| Outcomes to be assessed/ NOSs to be assessed | Assessment criteria for the outcome |
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| 1. Estimate of Land & Building | 1.1. Trainees will be able to explain the concept and purpose of estimates for different Civil construction work. |
| | 1.2 Trainees will be able to calculate Plinth Area, Covered Area, Carpet Area, Service Area, Floor area. |
| | 1.3 Trainees will be able to explain the approximate Methods of Estimating for Building. |
| | 1.4 Trainees will be able to prepare Detailed Estimate of Items of - i) a Wall with uniform spread footing, ii) a boundary wall with eccentric footing, iii) a single storied Building, iv) a Septic Tank, v) Semi-underground water reservoir . |
| 2. Estimate for quantity of material required to construct several item of works for a building | 2.1 Prepare the Estimate for quantity of materials required to construct the following item of works for a building |
| | a) Earth work in excavation. |
| | b) Brick flat soling. |
| | c) Plain Cement concrete. |
| | d) Brick work with cement mortar, |
| | e) Plastering. |
| | f) RCC work |
| | g) Wood work calculation, |

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| | h) Painting |
| 3. Prepare Rate analysis of typical items and their specification. | 3.1 Prepare rate analysis of major items - Earth Work, Brick Flat Soling, RCC, PCC, Wood Work, Stone & Brick masonry , Different Flooring , Plastering & Painting |
| 4. Booking items of work in a measurement book. | 4.1 Prepare and Booking of different item of works in measurement book according to sequence. |
| 5.Explain and demonstrate the process of tendering & Tender Documents, Contract & its types. | 5.1 Documents, Contract & its types |
| 6. Perform testing of different construction materials like - Bricks, Sand, Cement, Stone chips, Water, concrete. | 6.1 Testing of |
| | i) Bricks- Shape, size, colour, soundness, efflorescence, crushing strength, class. |
| | ii) Sand (Fine aggregate)- grading zone, fineness modulus, bulking of sand, silt content. |
| | iii) Cement-fineness, soundness, initial and final setting time, compressive strength of cement sand mortar. |
| | iv) Stone chips (Coarse aggregate)- grading, crushing strength, flakiness and elongation index, |
| | v) Concrete- Workability(slump test, compacting factor test), Compressive strength of concrete |
| | vi) Water-Turbidity, colour, odour, PH. |
| 7. Carry out a project by Preparing a measurement of a finished work, Estimating the cost of a building with Bill of materials and cost involved as per P.W.D. Rate and testing of different construction materials | 7.1 Prepare a measurement of a finished work. |
| | 7.2 Estimate of a two storied residential building having two flats of 200 sq.m. covered area per floor according to detailed drawing. (Estimate of items of work, Bill of materials and cost involved as per P.W.D. Rate.) |
| | 7.3. Physical testing of different construction materials Bricks, Sand, Cement, Stone chips, Steel, Water, Wood etc. |