GOVERNMENT OF TAMILNADU

DIRECTORATE OF TECHNICAL EDUCATION, CHENNAI

STATE PROJECT COORDINATION UNIT

(Established Under Canada India Institutional Cooperation Project)

CURRICULUM

Course Name	**BUILDING ESTIMATION AND COSTING**
Course Code	CE / 2020 / 013
Course Duration	40 Hours
Minimum Eligibility Criteria andPre-requisites (if any)	10^{TH} /+2/Diploma/Graduates
Course Objectives	Training Module has been designed for the Participants to • Explain types of estimate and duties of an Estimator • Describe various terms used in estimation work • Write specification for various items of civil works. • Estimate the cost of one/ two room building
Course Outcomes	At the end of training the participants will be able to • Differentiate the types of estimation, adopt specification and unit rates. • Analyse rates for different items of works • Interpret the drawings and estimate the quantities of various items in civil engineering structures.
Expected Job Roles	• Quantity Engineers • Costing and Estimation Engineers

TEACHING AND SCHEME OF EXAMINATION						
Course Code	**Course Name**	**Hours**		**Assessment Marks**		**Duration of Examination**
				Min	**Max**	
CE / 2020 / 013	**BUILDING ESTIMATION AND COSTING**	Theory	40	50	100	**3 Hours**
		Practical	---	---	---	
		Total	**40**	**50**	**100**	

DETAILED SYLLABUS

Unit No	Modules	No. of Hours	
		Theory	Problem Solving
I	**INTRODUCTION**	04	05
	Introduction - Technical terms - Unit measurements- Rules for measurements-Requirements of estimating and costing - Drawings – Specifications- Method of taking off quantities - Detailed Estimate - Data -Types of estimates- Problems.		
II	**ESTIMATE OF BUILDINGS**	05	05
	Load bearing structure-Framed structure-Plinth area method - Cubical content method- Unit base method- Pitched roof- Stair case- Compound walls.-Valuation – Rent calculation – Report writing		
III	**SPECIFICATION AND RATE ANALYSIS**	05	05
	Specification-Necessity of specification-Essential requirements specification- Specification for various item of works- Steps involved in standard specification - Rate analysis for Bricks and stone masonry-Lime concrete and cement concrete-RC works for slab,sunshade,beam and column-Road works- White washing and painting works		
IV	**PREPARE OFF QUANTITES**	05	06
	Prepare detailed Estimate using trade system and take off quantities for all items of works in following types of buildings . . . • A Small residential building with two/three rooms with RCC Roof. • Two storied building with RCC roof. • Industrial Buildings with AC/GI sheet roof with steel trusses • Community Hall with Columns and T-Beams.		
TOTAL THEORY/PROBLEM SOLVING HOURS		**19**	**21**
TOTAL HOURS		**40**	

HARDWARE REQUIREMENT

SL. NO.	LIST OF TOOLS / EQUIPMENTS
1.	Scientific Calculator

SOFTWARE REQUIREMENT

SL. NO.	NAME OF THE SOFTWARE
1.	NIL

REFERENCE BOOKS

SL.NO	NAME OF THE BOOK	AUTHOR	PUBLISHER
1.	Estimating and Costing in Civil Engineering	B.N. Dutta	UBSPD, New Delhi
2.	Estimating and Costing in Civil Engineering	S. C. Rangwala	Charotar Publication, Anand,Gujarat

ASSESSMENT AND CERTIFICATION

S.No	Criteria for Assessment
1.	A trainee will be assessed based on the performance in End Theory Examination conducted internally in the CIICP Project Polytechnic College for a duration of 3 hours
2.	A trainee must have 75% of attendance to appear for End examination in Theory.
3.	The assessment will be based on the marks scored in the end theory examination on the knowledge bank of questions.
4.	The passing criteria for successful completion of training is every trainee should score 50% of marks in the End Theory and Practical examination.
5.	On successful completion of training, Certificate will be issued to the participants by the Directorate of Technical Education through the Project Polytechnics.

END EXAMINATION

ALLOCATION OF MARKS

S. No.	Description	Maximum Marks
1.	THEORY EXAM PART – A (10 Qns x 2 Marks) : 20 PART – B (6 Qns x 5 Marks) : 30 PART – C (5 Qns x10Marks) : 50	100
	Total	**100**

THEORY MODEL QUESTION PAPER

CE / 2020 / 013 – BUILDING ESTIMATION AND COSTING
(Maximum Marks: 100)

PART – A

Answer any **Ten** Questions **10 x 2 = 20 Marks**

1. Define out turn of works.
2. What is a measurement book?
3. What is “Standard data book?
4. Define specification?
5. What are the types of estimates?
6. Define observed data.
7. Define Data
8. Define sub data
9. Define main data
10. Define the lump sum provision.
11. State a few works for which lump sum provisions are made in estimate.
12. What do you mean by sundries.
13. What is detailed estimate?
14. What is abstract estimate?
15. State the methods of taking off quantities.
16. What is centre line method?

PART – B

Answer any **Six** Questions **6 x 5 = 30 Marks**

1. What do you understand by the following estimates: (i) Repair estimate (ii)Complete estimate
2. State the order of taking off for a building.
3. Explain the two systems adopted in taking off quantities
4. Explain how deductions are made for the openings in plastering, masonry work and white washing.
5. Explain plinth area estimate and cubical content method.
6. What is lead statement? Explain its use.
7. Give an example of main data and sub data.
8. Name the units for the materials used in brick masonry in C.M 1:6.
9. State the procedure of long wall and short wall method of detailed estimate.

PART – C

Answer any **Five** Questions **5 x 10 = 50 Marks**

1. Explain typical bay method and rough quantity method of preparation of approximate estimate.
2. The actual cost of a single storey residential building of plinth area 85m^2 is found to be Rs. 3,50,000 in which 70% is towards the cost of materials and 30% towards the labour. It is proposed to construct a similar building of same specification with a plinth area 120m2 at a place where the cost of material to be 15% more and cost of labour 20% less. Estimate the rough cost of the proposed building.
3. The actual expenditure incurred in the construction of building of plinth area 82m^2 is Rs. 8,61,000 in which 65% towards the cost of materials and 35% is towards the cost of labour. It is now proposed to construct a similar building with a plinth area of 72m^2. Estimate the approximate cost of the proposed building, if the increase in cost of materials and labour is 18%.
4. The total expenditure incurred in the construction of a building for a shopping complex of plinth area 250m^2 and height 3.8m is Rs.9.25lakhs. A similar building of plinth area 200m^2 and height 3.6m id prepared in the same locality.
5. The cost of constructed of a framed structures has 5 days of 3.5m span and 11m width, the total cost is Rs. 6,00,000. Determine the approximate cost of construction of a similar building with 12 bays.
6. Prepare the data for the following items of work

   a) Plastering the brick masonry in CM 1:5 12mm thick -10m^2

   b) Plastering the brick masonry in CM 1:3 10mm thick - 10m^2

Quantity of materials and labour required:

a) Plastering the brick masonry in CM 1:5 12mm thick -10m^2

Cement mortar 1:5 - 0.14 m^3
Mason Ist class - 1.10 nos
MazdoorIst class - 0.50nos
MazdoorIInd class - 1.10 nos

b) Plastering the brick masonry in CM 1:3 10mm thick - 10m^2

Cement mortar 1:3 - 0.10 m^3
Mason Ist class - 1.10 nos
MazdoorIst class - 1.10nos
MazdoorIInd class - 1.10 nos

Cost of materials and labour

Cement - Rs. 5200/tonne
Sand - Rs. 500/ m^3
Mixing charges - Rs.100/ m^3
Mason Ist class - Rs. 450 each
Mason II nd class - Rs. 350 each per day
Mazdoor I st class - Rs. 300 each per day

Mazdoor II nd class - Rs. 100 each per day

7. Take the following quantities for the given building using trade system.
   (i) R.C.C roof slab 1:2:4 mix 150mm thick
   (ii) Plastering with C.M 1:5 12mm thick
   (iii) B.W IN CM1:5 for superstructure
   (iv) Sand filling in basement
   (v) Foundation concrete with C.C 1:4:8