GOVERNMENT OF TAMILNADU

DIRECTORATE OF TECHNICAL EDUCATION, CHENNAI

STATE PROJECT COORDINATION UNIT

(Established Under Canada India Institutional Cooperation Project)

CURRICULUM

Course Name	**BUILDING CONSTRUCTION**
Course Code	CE / 2020 / 005
Course Duration	90 Hours
Minimum Eligibility Criteria and Pre-requisites (if any)	10th / +2/Diploma/Graduates
Course Objectives	Training Module has been designed for the Participants to • Understand basic type of buildings and components • Understand types of materials used and tests carried out • Understand types of foundation, setting out of foundation • Understand masonry work, building components and types • Understand special works carried in construction works
Course Outcomes	At the end of the training, participants will be able to • Identify the Materials and components used in construction • Test the material before using in site • Understand types of foundation works carried out • Understand building components used,types of masonry works and special works carried in construction.
Expected Job Roles	• Building Contractor, Site Supervisor

TEACHING AND SCHEME OF EXAMINATION						
Course Code	**Course Name**	**Hours**		**Assessment Marks**		**Duration of Examination**
				Min	**Max**	
CE / 2020 / 005	**BUILDING CONSTRUCTION**	Theory	50	10	20	**3 Hours**
		Practical	40	40	80	
		Total	**90**	**50**	**100**	

DETAILED SYLLABUS

Unit No	Modules	No. of Hours	
		Theory	Practical
I	**INTRODUCTION**	04	---
	General-Classification of buildings-Components of building-Design loads-Basic requirements of buildings-Building planning.		
II	**MATERIAL USED FOR CONSTRUCTION**	10	12
	Rocks and stones- Classification of rocks and uses – Bricks- Classification of bricks- Manufacturing process-Properties of bricks- Test on bricks – Cement- Types of cement- Test on cement – Admixtures- Types and uses-Water- Requirements of water- Test on water .		
III	**SUB STRUCTUREFOUNDATIONS**	10	08
	Definition offoundation- Purpose offoundation -Bearing Capacity of soil and itsrelevance to foundation - Classification of Foundation-Shallow Foundation, DeepFoundation-Setting out and excavation of foundation-Causes of failure offoundation and remedial measures.		
IV	**MASONRY CONSTRUCTION**	09	09
	Stone masonry: Technical terms, joints, classification of stone masonry **Brick masonry**: Technical terms, bonds in brick work **Other masonry**: Composite masonry, Hollow masonry, Partition wall, Cavity walls. **Lintels& arches**: Lintels, types, arches, types. **Wall Finishes**: Plastering, Pointing and Painting.		
V	**BUILDING COMPONENTS**	10	06
	Doors: Location, Technical terms, Types. **Windows**: Introduction, Types of Windows, Fixtures and Fastenings, Ventilators. **Stairs and Staircases**: Definition, Technical terms, Requirements of good stair, Classification, Elevators, Escalators. **Floorings**: Introduction, Materials used, Types of ground floors and upper floor. **Roofs and Roof Coverings**: Introduction, Requirements of good roof, Classification, Types of roof coverings for Pitched roof, Flat terraced roof, Advantages, Disadvantages.		

VI	**SPECIAL WORK AND SPECIAL TREATMENTS**	05	05
	Timbering in Trenches - Types of Scaffoldings – Shoring - Underpinning. **Special Treatments**: Fire resistant- Water resistant- Thermal insulation - Acoustical construction and Antitermite treatment.		
VII	**GREEN BUILDINGS**	02	---
	Green buildings - Concept and Case Study		
	TOTAL THEORY AND PRACTICAL HOURS	**50**	**40**
	TOTAL HOURS	**90**	

PRACTICAL EXERCISES (40 HOURS)	
SL.NO.	**List of Experiments**
1.	To calculate the compressive strength of the given bricks.
2.	To calculate the water absorption capacity of bricks.
3.	To calculate the initial and final setting time of cement.
4.	To calculate the fineness of cement by sieve analysis.
5.	To calculate the total solids present in water.
6.	Setting out of spread footing or different footings given.
7.	Arrangement of bricks in different types of bonds, L-junction, T-junction and pillars.
8.	Identify and explain the different parts of doors, staircase.
9.	Do painting and varnishing for given material.
10.	Identifying types of scaffolding and shoring and explain any 3.

HARDWARE REQUIREMENT

SL. NO.	LIST OF TOOLS / EQUIPMENTS / MATERIALS
1.	Bricks
2.	Cement, Aggregate
3.	Vicat Apparatus
4.	Sieve Set
5.	Rope, Pegs, Hammer, Tape, Marking tools
6.	Door Model
7.	Staircase Model
8.	Paint and Varnish
9.	Compressing Testing Machine
10.	Beaker
11.	Oven
12.	Different Types of Scaffolding & Shoring Models
13.	Weighing balance, Trowel, Pan, Measuring Jar (1000 ml)

SOFTWARE REQUIREMENT

SL. NO.	NAME OF THE SOFTWARE
	NIL

REFERENCE BOOKS

SL. NO	NAME OF THE BOOK	AUTHOR	PUBLISHER
1.	Building Construction	B.C. Punmia	Laxmi Publication
2.	Building Construction	S. P. Arora& S.P. Bindra	----
3.	Material Testing Lab Manual	Online	----

ASSESSMENT AND CERTIFICATION

S.No	Criteria for Assessment
1.	A trainee will be assessed based on the performance in End Examination for Theory and Practical 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 and Practical.
3.	The assessment for theory part will be based on the marks scored in the end examination on the knowledge bank of questions (1 Word/Objective type questions).
4.	The assessment for practical part will be based on the marks scored in the end examination conducted by the CIICP Project Polytechnic and assessed by the Examiners approved by Strategic Plan Implementation Committee (SPIC) of the project polytechnic.
5.	The passing criteria for successful completion of training is every trainee should score 50% of marks in the End Theory and Practical examination.
6.	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	20
2.	PRACTICAL EXAM	
	a. APPARATUS REQUIRED & SKETCH	10
	b. PROCEDURE	10
	c. OBSERVATION AND CALCULATION	30
	d. RESULT / OUTPUT	10
	e. RECORD	20
	Total	**100**

THEORY MODEL QUESTION PAPER

CE / 2020 / 005 – BUILDING CONSTRUCTION
(Maximum Marks: 20)

(N.B: Answer any**Twenty** Questions) **20 x 1 = 20 Marks**

1. In building, where products are assembled or manufactured?

a) Residential building b) Factory building
c) Storage building d) Mercantile building

2. The lower most part of the building that transmits load from the structure to soil is ……

a) Foundation b) Plinth
c) Walls and columns d) Lintel

3. The wall portion between the ground level and the ground floor level ……

a) Floors b) Plinth
c) Walls and columns d) Lintel

4. The rocks having layered appearance due to grains of different composition, color, or size depositing at different times are …….

a) Sedimentary Rocks b) Igneous Rocks
c) Metamorphic Rocks d) Intrusive rocks

5. The cement used in construction which requires quick setting time is ……..

a) Ordinary Portland cement b) Rapid Hardening Portland Cement
c) Quick setting cement d) Sulphate resisting cement

6. Which one of the following is not a test on cement?

a) Normal consistency b) Fineness test
c) Total solids d) Initial and final test

7. The admixtures that improves the bond between the reinforced steel bars and the grout is

a) Water proofing admixtures b) Gas foaming admixture
c) Accelerating admixture d) Retarding admixture

8. The Foundation which depth is greater than its width is …….

a) Deep foundation b) Shallow foundation
c) Combined footing d) Isolated footing

9. The foundation has box like structure and has large diameter compared to deep foundation is ……..

a) Caisson foundation b) Coffer foundation
c) Deep foundation d) Shallow foundation

10. It is used to drain off the rain water and it is provided in sloped surfaces ……

a) Plinth b) Jamb
c) Weathering d) Sill

11. The bricks which have holes not exceed 25% of total volume of brick is

a) Frogged bricks b) Solid bricks
c) Perforated bricks d) Cellular bricks

12. The wall which divides the portion of room or hall is ……

a) Partition wall b) Cavity wall

c) Hollow wall d) Load bearing wall

13. The centre of arch lies below the springing line is …….

a) Flat arch b) Pointed arch

c) Segmental arch d) Florentine arch

14. It is hanging on one side of door ……..

a) Lock rail b) Cross rail

c) Hanging style d) Horn

15. The door consist of pivot at centre which revolves aroundis ,,,,,,,,,,,,,,,,

a) Ledge door b) Sliding doorc) Revolving door d) Shutter door

16. The vertical distance between two tread is …….

a) Rise b) Tread c) Flight d) Going

17. The temporary structure used to support or to provide a safety platform for the workers is

a) Scaffolding b) Shoring

c) Sheeting d) Under pining

18. The presence of moisture in various parts of building like floor, wall, roof is …….

a) Fire resistant b) Dampness

c) Anti termite treatment d) Thermal insulation

19. The special treatment in order to avoid the growth of termite is ……..

a) Fire resistant b) Dampness

c) Anti termite treatment d) Thermal insulation

20. Green building is divided in to ……

a) Two sections b) Three sections

c) Four sections d) Six sections

21. The load that is calculated only in snowfall places is

a) Wind load b) snow load c) Earth quake load d) dead load

22. The test on bricks based on dimension or size of bricks is

a) Water absorption test b) dimension test

c) Efflorescence test d) compression test

23. It is used to denote the ultimate load per unit area and causes soil displacement is

a) Ultimate bearing capacity b) safe bearing capacity

c) Unsafe bearing capacity d) minimum bearing capacity

24. The joint in stone masonry used to prevent sliding

a)Table Joint b) lapped joint c)tongued Joint d) plugged joint

25. The type of scaffolding with moving ladders used for inside the room is

a)trestle scaffolding b)patented scaffolding

c)steel scaffolding d)suspend scaffolding
