

## Construction Materials

Subject Code -CIV201

UNIT NO	Unit skill set (In cognitive domain)	Topics/Sub topics	
<b>UNIT-1 Natural Constructi on Materials</b>	1. Identify rocks based on geology of its origin 2. Explain the requirements and characteristics of stones 3. Explain the methods of Quarrying of stones 4. Explain the methods of deterioration of stones 5. Explain the methods of preservation of stones 6. Mention the properties of sand and its uses 7. Explain the classification of	1.1	Geological classification of Rocks
		1.2	Requirements of good building stone
		1.3	General characteristics of stone
		1.4	Quarrying of stones by wedging
		1.5	Quarrying of stones by blasting
		1.6	Deterioration of stones
		1.7	Preservation of stones
		1.8	Properties of sand and uses
		1.9	Classification of coarse aggregate according to size
		1.10	Structure of timber
		1.11	General properties and uses of good timber
		1.12	Different methods of seasoning
			for preservation of timber.
		1.13	List various Defects in timber
		1.14	Use of bamboo in construction
	Asphalt-properties and uses		
	8. Coarse aggregate according to size 9. Explain the structure and properties of timber 10. apply the use of Bamboo in construction. 10. Mention the properties and uses of Asphalt.	1.15	
<b>UNIT-II Artificial Constructi on Materials</b>	1. Explain the constituents and characteristics of Bricks 2. Perform Field tests on Bricks 3. With a neat diagram able to explain manufacturing process of bricks 4. Write the properties of Aerated Concrete Blocks 5. Identify different varieties of Floor tiles and wall tiles, Glazed tiles and vitrified tiles 6. With a neat diagram able to explain manufacturing process of cement. 7. Identify different types of cement and mention their uses. 8. Explain properties and uses of precast hollow and solid concrete blocks and pavement blocks.	2.1	Constituents of Good brick earth
		2.2	Modular and Standard bricks
		2.3	Special bricks -fly ash bricks
		2.4	Characteristics of good brick
		2.5	Field tests on Bricks
		2.6	Manufacturing process of burnt clay brick
		2.7	Clamp burning of Bricks
		2.8	Hoffmann's kiln
		2.9	Aerated concrete blocks-Properties and uses
		2.10	Flooring and wall tiles - Clay tiles,
		2.11	Glazed tiles and vitrified tiles
		2.12	Manufacturing process of Cement-only dry process
		2.13	Types of cement and its uses.
2.14	Properties and uses of Pre-cast hollow and solid concrete blocks		
2.15	Properties and uses of pavement blocks		
2.16	Artificial or Industrial Timber -Plywood, Particle board, Veneers		

	9. Explain and identify Plywood Particle board, veneers and laminated boards	2.17	Laminated board and their uses.
	10 Identify and explain uses of different types of glasses.	2.18	Types of glass: Soda lime glass, Lead glass and Borosilicate glass and their uses.
	11. Explain the properties and uses of Ferrous, Non-ferrous and alloys.	2.19	Ferrous Metals- Cast Iron and Steel- List Properties and Uses
		2.20	Non-ferrous metals- Aluminium, Copper, Zinc, - Properties and uses
		2.21	Alloys- Aluminium Alloys and Steel Alloys- Composition, and uses
<b>UNIT-III Processed Construction Materials</b>	1. Explain the constituents and Uses of POP 2. Explain properties and uses of Fiber reinforced plastics 3. Explain properties and uses of Paints, Distempers, oil paints and varnishes and able to apply for different types of surfaces, 4. Know the manufacturing process and uses of Manufactured Sand. 5. Identify different Cladding materials.	3.1 Constituents and uses of POP (Plaster of Paris),	
		3.2 Plastics- Properties and uses of plastics	
		3.3 Fiber reinforced plastic (FRP) its properties and applications	
		3.4 Paints and Distempers, Ingredients and their uses. Properties of good paint.	
		3.5 Oil Paints and Varnishes with their uses. (Situations where used).	
		3.6 Varnishes with their uses. (Situations where used).	
		3.7 Special processed construction materials; Geo synthetic, Ferro Crete.	
		3.8 Manufactured sand (m sand): its manufacturing and their uses.	
		3.9 Cladding materials-Terracotta,	
		3.10 High Pressure Laminates (HPL) Aluminium Composite panels (ACP), Glass Reinforced Concrete (GRC), Pre painted Galvanized Iron sheets.	
<b>UNIT-IV Special Construction Materials</b>	1. Explain the types of water proofing materials, Termite proofing materials, and sound insulating materials and suitability of its different types in construction 2. Explain the properties and applications of Geopolymer cement 3. Explain the applications of Epoxy Resins, Non-Shrink Grouts	4.1 Water proofing material- Types and its suitability in construction	
		4.2 Termite proofing- Types and its suitability in construction	
		4.3 Sound insulating materials- Types and its suitability in construction,	
		4.4 Epoxy Resins ,Non-Shrink Grouts Shotcrete- Applications	
		4.5 Gypsum and its products :Types and its suitability in construction	
		4.6 Properties and uses of Geo polymer cement	

### SUGGESTED LEARNING RESOURCES

<b>S. No</b>	<b>Author</b>	<b>Title of Books</b>	<b>Publication/Year</b>
<b>1</b>	Ghose, D. N.	Construction Materials	Tata McGraw Hill
<b>2</b>	S.K. Sharma	Civil Engineering Construction Materials	Khanna Publishing House
<b>3</b>	Varghese.P.C	Building Materials	PHI learning, NewDelhi.
<b>4</b>	Rangwala, S.C.,	Engineering Materials	Charatorpublisher,Ahemdabad.
<b>6</b>	Somayaji, Shan	Civil Engineering Materials	Pearson education, NewDelhi
<b>7</b>	Rajput,R.K	Engineering Materials	S. Chand and Co. New Delhi.
<b>8</b>	Sood H.,	Laboratory Manual on Testing of Engineering Materials	New Age Publishers New Delhi.
<b>9</b>	Sharma C. P	Engineering Materials	PHI Learning, NewDelhi
<b>10</b>	Duggal, S. K	Building Materials	New International, NewDelhi.
<b>11</b>	S.S.Bhavikatti	Building Materials	Vikas Publishing House Pvt.Ltd.