

BOARD OF TECHNICAL EXAMINATIONS, GOA STATE

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

TERM I

(2055) BUILDING MATERIALS - I

Lectures per week : 2 hrs. Theory Marks : 100  
 Practical per week : Nil (one paper 3 hrs)  
 Course Credits : 2 Prod. Assessment Marks : 25  
 Total : 125

Semester	Theory	Test	Total	TW	PR	Gr Total
	75	25	100	-	-	100

Rationale - The aim of this course is to introduce the students to basic materials and their appropriate use in the building industry. Care has been taken while developing the curriculum to introduce new and local materials.

Sr. No.	Course contents	Hrs.	Marks
1.	<u>Stones</u> :- Classification of rocks with examples, (10) - Qualities of good building stone, - Types of stones used in building industry, their properties & uses. - Availability in India.	3	10
II	<u>Brick</u> - Introduction as an artificial building material - Comparison of brick with stone as a building material. - Requirement of good brick earth. - Brief description of manufacture of bricks. - Difference between machine and hand made bricks. - Classification of brick - normal or heavy duty burnt clay bricks. - Field test for bricks. - Properties & Qualities of a good brick.	5	12
III	<u>Lime</u> - Introduction as a binding material - Sources of lime - Classification of lime & comparison between fat & hydraulic lime - Field test for lime	2	8
IV	<u>Cement</u> - Definition. - Composition & properties of ordinary cement.	5	12

	<ul style="list-style-type: none"> <li>- Requirement &amp; Qualities of rapid hardening, low heat and pozzolana cement used in general building construction.</li> <li>- Special cements.</li> <li>- Field tests for cement.</li> <li>- Storage of cement.</li> </ul>	3	10
V	<u>Aggregates</u> <ul style="list-style-type: none"> <li>i) Fine aggregate - classification according to source &amp; size.</li> <li>- Properties of good sand.</li> <li>- Function of sand in mortars &amp; concrete.</li> <li>ii) Coarse aggregate - Different sizes and their uses. Different types of stone aggregates.</li> </ul>	3	10
VI	<u>Mortars</u> <ul style="list-style-type: none"> <li>- Definition.</li> <li>- Different types of mortars - lime mortar, mud mortar, cement mortar.</li> <li>- Properties of good mortar mix.</li> <li>- Uses of mortars.</li> <li>- Preparation of mortars &amp; precautions to be taken.</li> </ul>	3	10
VII	<u>Steel</u> <ul style="list-style-type: none"> <li>- Introduction as a building material.</li> <li>- Market forms &amp; sizes</li> <li>- Properties &amp; uses of mild steel.</li> <li>- Requirement of medium tensile steel used in concrete enforcement &amp; high tensile steel used in prestressed concrete.</li> <li>- Defects in steel.</li> </ul>	3	10
VIII	<u>Timber</u> <ul style="list-style-type: none"> <li>- Timber as a building material - advantage &amp; disadvantage</li> <li>- Qualities of good timber.</li> <li>- Defects in timber.</li> <li>- Preservation, seasoning &amp; storage of timber.</li> <li>- Classification of commercial timber &amp; identification.</li> <li>- Market forms.</li> <li>- Uses.</li> </ul>	5	15

IX	<u>Aluminium</u> Properties & uses of Aluminium & its alloys. Various market forms & sections used in building industry.	1	4
X	<u>Roofing Materials</u> i) Tile - Requirements of clay roofing tiles (Mangalore pattern) - Qualities of good tiles. - Fixing. ii) A/c sheets - unreinforced corrugated and flat cement sheets. - Market sizes. - Qualities of good A/c sheets. - Fixing. iii) G.I. sheet - Corrugated - Market size - Fixing - Advantage & disadvantage of all the above.	2	9

#### REFERENCE BOOKS

- 1) All relevant Building digest (CBRI)
- 2) All relevant Indian Standards.
- 3) Engg. Materials - S.C. Rangvala.
- 4) Engg. Materials - G. J. Kulkarni.
- 5) Materials of Construction - R.S. Kulkarni.
- 6) Building Materials - Sushil Kumar.

Total	32	100
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