

**MAHARASHTRA STATE BOARD OF VOCATIONAL EDUCATION EXAMINATION,  
MUMBAI -51**

1	Name of Syllabus	<b>C. C. In Testing of Construction Materials. (304111)</b>																																								
2	Max.Nos of Student	25 Students																																								
3	Duration	6 Months																																								
4	Type	Part Time																																								
5	Nos Of Days / Week	6 Days																																								
6	Nos Of Hours /Days	4 Hrs																																								
7	Space Required	Workshop = 200 Sq feet <u>Class Room = 200 Sq feet</u> TOTAL = 400 Sq feet																																								
8	Entry Qualification	SSC PASS																																								
9	Objective Of Syllabus/ introduction	To know the information about testing of construction material.																																								
10	Employment Opportunity	Can work as a Asst. Lab technician																																								
11	Teacher’s Qualification	Diploma / Degree in civil Engineering from recognized University.																																								
12	Training System	<table><tr><th colspan="4">Training System Per Week</th></tr><tr><td>Theory</td><td>Practical</td><td colspan="2">Total</td><td colspan="2"></td></tr><tr><td>6 Hours</td><td>18 Hours</td><td colspan="2">24 Hours</td><td colspan="2"></td></tr></table>						Training System Per Week				Theory	Practical	Total				6 Hours	18 Hours	24 Hours																						
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13	Exam. System	<table><tr><th>Sr. No.</th><th>Paper Code</th><th>Name of Subject</th><th>TH/PR</th><th>Hours</th><th>Max. Marks</th><th>Min. Marks</th></tr><tr><td>1</td><td>30411111</td><td>Material Testing</td><td>TH-I</td><td>3 hrs</td><td>100</td><td>35</td></tr><tr><td>2</td><td>30411121</td><td>Testing of Materials in General</td><td>PR-I</td><td>3 hrs</td><td>100</td><td>50</td></tr><tr><td>3</td><td>30411122</td><td>Testing of Concrete and Soil</td><td>PR-II</td><td>6 hrs</td><td>200</td><td>100</td></tr><tr><td></td><td></td><td>Total</td><td></td><td></td><td>400</td><td>170</td></tr></table>						Sr. No.	Paper Code	Name of Subject	TH/PR	Hours	Max. Marks	Min. Marks	1	30411111	Material Testing	TH-I	3 hrs	100	35	2	30411121	Testing of Materials in General	PR-I	3 hrs	100	50	3	30411122	Testing of Concrete and Soil	PR-II	6 hrs	200	100			Total			400	170
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## Syllabus

### THEORY – I - Material Testing

- 1) General Note on Material testing – Necessity and importance of testing-Sampling and its importance- Methods of Sampling- Types of Testing of materials in general
  - a) Tests on full sized structures, members b) Tests on models, members c) Tests on raw materials or processed materials. Significance of testing – Indian Standard specifications - Advantages of the same.
- 2) Common materials widely used requiring testing – Bricks, Cement, Sand, c.agg, tiles, steel, concrete, concrete blocks bitumen, RMC- Definition application of all the above -
- 3) Bricks - Manufacture of bricks – sizes of bricks- field testing of bricks - Laboratory testing Of bricks – Water absorption, size, compressive strength, efflorescence -
- 4) Cement - Manufacture of OPC - Physical properties of cement , Types of cement (OPC, PPC, RHC, BSFC ) Field tests for cement. Laboratory tests for cement - (Standard consistency, initial & final setting time, Soundness test, compressive strength test)
- 5) Aggregate – Source, size shape, Sp.Gr water absorption, moisture content, sieve analysis & Fineness modulus, Los Angeles index, elongation index, specific gravity, bulking of sand, Agg crushing value, impact value, abrasion value -
- 6) Testing of steel – field tests – study of UTM, study of extensometer, Tension test on mild steel , Tension test on deformed bar – Tension test on High tensile steel. bending test on ductile metals Deflection & flexure test on brittle and ductile material, Izod impact test Charpy impact test Brinell hardness impact test Rockwell impact test shear test on material. Torsion test on mild steel.

### Practical – I - Testing of Materials in General

Brick – Practical Observation such as absorption , texture, ringing, and breaking strength and bricks. Counting of bricks, field testing of bricks – such as for texture, dimensions, water absorption colour and efflorescence and efflorescence.
Cement of lime – Testing of cement and lime in the field.
Setting of bricks for spread foundation (Dry bricks without mortar)
<b>Practical – II - testing of Concrete and Soil</b>
Setting of bricks for 11/2 thick brick wall in English bond up to 2 meter height.
Setting of bricks for 11/2 thick brick wall in Flemish bond up to 2 meter height.
Setting bricks for 2 brick thick pillar upto 11/2 meter height.
Testing of steel
Testing of bricks
Testing of aggregates

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