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Repair and Maintenance of Building — Complete Syllabus (Program Elective-1, Option B)

BTEUP Diploma in Civil Engineering • 5th Semester • Session 2026-27

Subject 5.5 (Program Elective-1, Option B) • Total 100 Marks • 2 Credits • L 2 • Choose this OR Green Building and Energy Conservation

Examination Scheme

Code	Paper	Type	L - P	Credits	Internal	External	Total
5.5	Program Elective-1: Repair and Maintenance of Building	Theory	2 - 0	2	Theory 40	Theory 60 (3 hrs)	100
Repair and Maintenance of Building Total				2	40	60	100

What This Subject Aims To Do

To learn about types of maintenance techniques, understand causes of various types of damages, know about relevant materials for repair, and learn methods of retrofitting for different structures.

Unit-Wise Complete Topic List

Unit	Topic	Periods	Marks Share
1	Basics of Maintenance	5	15%
2	Damages: Causes and Its Detection	6	20%

3	Defects and Their Root Causes	5	20%
4	Materials for Repair, Maintenance and Protection	3	15%
5	Remedial Measures for Building Defects	9	30%

Unit 1 — Basics of Maintenance (5 Periods, 15%)

Topics: Need for maintenance: importance and significance of repair and maintenance of buildings, meaning of maintenance, objectives of maintenance, factors influencing the repair and maintenance.

Unit 2 — Damages: Causes and Its Detection (6 Periods, 20%)

Topics: Agencies causing deterioration (sources, causes, effects): definition of deterioration/decay; factors causing deterioration, their classification, human factors causing deterioration, chemical factors causing deterioration, environmental conditions causing deterioration, miscellaneous factors; effects of various agencies of deterioration on various building materials i.e. bricks, timber, concrete, paints, metals, plastics, stones; investigation and diagnosis of defects: systematic approach/procedure of investigation, sequence of detailed steps for diagnosis of building defects/problems, list of non-destructive and other tests on structural elements and materials to evaluate the condition of the building, and study of three most commonly used tests.

Unit 3 — Defects and Their Root Causes (5 Periods, 20%)

Topics: Define defects in buildings, classification of defects; main causes of building defects in various building elements: foundations, basements and DPC, walls, column and beams, roof and terraces, joinery, decorative and protective finishes, services, defects caused by dampness.

Unit 4 — Materials for Repair, Maintenance and Protection (3 Periods, 15%)

Topics: Compatibility aspects of repair materials; state application of following materials in repairs: anti-corrosion coatings, adhesives/bonding aids, repair mortars, curing compounds, joints sealants, waterproofing systems for roofs, protective coatings.

Unit 5 — Remedial Measures for Building Defects (9 Periods, 30%)

Topics: Preventive maintenance considerations; surface preparation techniques for repair; crack repair methods: epoxy injection, grooving and sealing, stitching, adding reinforcement and grouting, and flexible sealing by sealant; repair of surface defects of concrete: bug holes, form tie holes, honey comb and larger voids; repair of corrosion in RCC elements: steps in repairing and prevention of corrosion in reinforcement; material placement techniques with sketches: pneumatically applied (the gunite techniques), open top placement, pouring from the top to repair bottom face, birds mouth, dry packing, form and pump, preplaced-aggregate concrete, trowel applied method; repair of DPC against rising dampness: physical methods, electrical methods, chemical methods; repair of walls: repair of mortar joints against leakage and efflorescence removal; waterproofing of wet areas and roofs: waterproofing of wet areas, waterproofing of flat RCC roofs, various waterproofing systems and their characteristics; repair of joints in buildings: types of sealing joints with different types of sealants, techniques for repair of joints, and repair of overhead and underground water tanks.

Reference Books (as listed in the syllabus)

- Gahlot, P. S., Sharma, S., Building Repair and Maintenance Management, CBS Publishers & Distributors Pvt. Ltd., New Delhi.
- Guha, P. K., Maintenance and Repairs of Buildings, New Central Book Agencies.
- Hutchin Son, B. D., Maintenance and Repairs of Buildings, Newnes-Butterworth.
- Relevant BIS codes.
- Aarti Chaurasiya, Repair & Maintenance of Buildings, Asian Publishers, Muzaffarnagar, ISBN No. 978-93-5502-178-6.

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Source: BTEUP 3rd Year curriculum (folder2627), approved in C.D.C. meeting held on 16.07.2026. Topic lists follow the official syllabus; short explanations are the author's own plain-English summaries, not syllabus text.

Please confirm with your own polytechnic for any local changes.