

AMS21 REPAIR & REHABILITATION OF STRUCTURES

UNIT-1 INTRODUCTION

- 1.1 Maintenance, rehabilitation, repair, retrofit and strengthening, need for rehabilitation of structures.
- 1.2 Cracks in R.C. buildings Various cracks in R.C. buildings, causes and effects
- 1.3 Maintenance importance of maintenance, routine and preventive maintenance.
- 1.4 Damages to masonry structures Various damages to masonry structures and causes

UNIT-2 REPAIR MATERIALS

- 2.1 Various repair materials, Criteria for material selection, Methodology of selection, Health and safety precautions for handling and applications of repair materials
- 2.2 Special mortars and concretes Polymer Concrete and Mortar, Quick setting compounds
- 2.3 Grouting materials Gas forming grouts, Sulfaluminate grouts, Polymer grouts, Acrylate and Urethane grouts.
- 2.4 Bonding agent's Latex emulsions, Epoxy bonding agents.
- 2.5 Protective coatings Protective coatings for Concrete and Steel
- 2.6 FRP sheets

UNIT-3 DAMAGE DIAGNOSIS AND ASSESSMENT

- 3.1 Visual inspection, Non Destructive Testing using Rebound hammer,
- 3.2 Ultra-sonic pulse velocity, Semi destructive testing, Probe test, Pull out test,
- 3.3 Chloride penetration test, Carbonation, Carbonation depth testing,
- 3.4 Corrosion activity measurement
- 3.5 Substrate preparation Importance of substrate/surface preparation,
- 3.6 General surface preparation methods and procedure, Reinforcing steel cleaning

UNIT-4 CRACK REPAIR

- 4.1 Various methods of crack repair, Grouting, Routing and sealing, Stitching, Dry packing, Autogenous healing, Overlays, Repair to active cracks, Repair to dormant cracks.
- 4.2 Corrosion of embedded steel in concrete Corrosion of embedded steel in concrete, Mechanism, Stages of corrosion damage, Repair of various corrosion damaged of structural elements (slab, beam and columns)
- 4.3 Jacketing, Column jacketing, Beam jacketing, Beam Column joint jacketing, Reinforced concrete jacketing, Steel jacketing, FRP jacketing.
- 4.4 Strengthening, Beam shear strengthening, Flexural strengthening

Reference Books:

1. Failures and repair of concrete structures by S.Champion, John Wiley and Sons, 1961.
2. Diagnosis and treatment of structures in distress by R.N.Raikar Published by R & D Centre of Structural Designers and Consultants Pvt.Ltd, Mumbai.
3. Handbook on repair and rehabilitation of RCC buildings, CPWD, Government of India.