2.11=30283 STRUCTURAL FIRE SAFETY

ModuleI

Effect of temperature on the properties of structural materials- concrete, steel, masonry and wood; Behaviour of non-structural materials on fire- plastics, glass, textile fibres and other house hold materials; Determination of combustibility by fire tube method; Brief description on non-combustibility test and classification of flame spread rate of materials as per relevant standards(BIS).

Compartmentfire-factorscontrollingfireseverity,ventilationcontrolledandfuelcontrolledfires;Spreadoffire in rooms, within building and betweenbuildings.

ModuleII

Experimentaldeterminationoffireresistance–typesoffurnaces;Approximatemethodsforcalculatingthefire resistance of structural elements-Schematic diagrams, influencing factors; Concept of static, thermal engineering and experimental methods for the calculation of fire resistance; Principle of the calculation of the fire resistance limits of structures-coefficient of fire resistance, fire duration; Approximate calculation of the requiredfireresistanceforabuilding.

ModuleIII

Fire area- calculation of building fire area, subdivision of fire areas in Industrial, Residential and Public buildings;Fireseparationbetweenbuilding-principleofcalculationofsafedistance.

Design principles of fire resistant walls and ceilings; Fire resistant screens-solid screens and water curtains; Localbarriers;Firestoppedareas-inroof,infireareasandinconnectingstructures;

Fire doors- Low combustible, Non combustible and Spark-proof doors; suspension of doors; Air-tight sealing of doors; Specification, test and performance criteria of Plate, Metal covered and Rolling type fire doors as per relevant standards(ISI).

ModuleIV

Fabricated fire proof boards-calcium silicate, Gypsum, Vermiculite, and Perlite boards; Fire protection of structuralelements–Wooden,Steel,RCC,andPlasticstructures;

Reparability of fire damaged structures- Assessment of fire severity, Assessment of damage to concrete, steel, masonry and timber structures, Assessment of feasibility of repair; Repair techniques- repair methods to reinforced concrete Columns, beams and slabs, Repair to steel structural members, Repair to masonry structures.

References:

1. Roytman M. Ya., "*Principles of Fire Safety Standards for Building Construction*", Amerind Publishing Co. Pvt. Ltd., New Delhi,1975
2. Smith E.E. and HarmathyT.Z.(Editors), "*Design of Buildings for fire safety*", ASTM Special Publication 685, AmericanSocietyforTestingandMaterials,Boston,U.S.A.,1979.
3. E.Gorden Butcher E. G. and Parnell A. C., "*Designing of fire safety*", John Wiley and Sons Ltd., New York, U.S.A.,1983
4. MarchantE.W., "*A Complete Guide to Fire andBuilding*",
5. Adam and Charles Black, "*Fire safety inBuildings*",
6. HMSO, "*Fire protection in factorybuilding*",
7. BIS, "*IS-12777- Fire safety-flame-spread of products- Method for classification*, Bureau of Indian Standards, New Delhi,1989.
8. BIS, "*IS 3614 (Part-1) – Specification of fire check doors-part 1: Plate, metal covered and rolling type*" BureauofIndianStandards,NewDelhi,1966.
9. BIS, "*IS 3614 (Part-2) – Specification of metallic and non-metallic fire check doors-part 2: Resistance test andperformancecriteria*,BureauofIndianStandards,NewDelhi,1992.