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| NameoftheInstitute: | **R.K. INSTITUTE OF ENGG. & TECH.** |
| Department : | **CIVIL ENGINEERING** |
| Semester: | 4thSEM. |
| SubjectNamewithcode: | THEORY OF STRUCTURE |
| TotalNo.ofClass(Required): | 45 FROM-22/12/2025 TO-18/04/2026 |
| **FacultyName:** | **ANNAPURNA SETHI** |

| **Class** No. | **BriefDescriptionoftheTopic/Chaptertobetaught** | **Remarks** |
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| 1 | Direct and Bending Stresses in vertical members | |
| 2 | Introduction to axial and eccentric loads, eccentricity about one principal axis only, nature of stresses, Maximum and minimum stresses, resultant stresses and distribution diagram | |
| 3 | Condition for no tension or zero stress at extreme fiber, Limit of eccentricity, core of section for rectangular and circular cross sections, Middle third rule. | |
| 4 | Chimneys of circular cross section subjected to wind pressure, Maximum and minimum stresses, resultant stresses and distribution diagram at base. | |
| 5 | Chimneys of circular cross section subjected to wind pressure, Maximum and minimum stresses, resultant stresses and distribution diagram at base. | |
| 6 | Analysis of dams subjected to horizontal water pressure, conditions of stability, Maximum and minimum stresses, 8 10 resultant stresses and distribution diagram at base. | |
| 7 | Analysis of dams subjected to horizontal water pressure, conditions of stability, Maximum and minimum stresses, 8 10 resultant stresses and distribution diagram at base. | |
| 8 | Slope and Deflection | |
| 9 | Concept of slope and deflection, stiffness of beams, Relation among bending moment, slope, deflection and radius of curvature, (no derivation) | |
| 10 | Double integration method to find slope and deflection of cantilever and simply supported beams subjected to concentrated load and uniformly distributed load on entire span | |
| 11 | Double integration method to find slope and deflection of cantilever and simply supported beams subjected to concentrated load and uniformly distributed load on entire span | |
| 12 | Macaulay's method for slope and deflection, application to cantilever and simply supported beam suubjected to concentrated and uniformly distributed load on entire span. | |
| 13 | Macaulay's method for slope and deflection, application to cantilever and simply supported beam suubjected to concentrated and uniformly distributed load on entire span. | |
| 14 | Determinate and Indeterminate structures (Fixed and Continuous Beam) | |
| 15 | Concept of Determinate and Indeterminate structures | |
| 16 | • Concept of fixity, effect of fixity, advantages and disadvantages of fixed beam over simply supported beam | |
| 17 | Principle of superposition, Fixed end moments from first principle for beam subjected to point load, UDL over entire span. | |
| 18 | Principle of superposition, Fixed end moments from first principle for beam subjected to point load, UDL over entire span. | |
| 19 | Application of standard formulae in finding end moments, end reactions and drawing S.F. and B.M. diagrams for a fixed beam. | |

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| 20 | Definition, effect of continuity, nature of moments induced due to continuity, concept of deflected shape, practical examples | |
| 21 | Clapeyron's theorem of three moment (no derivation), Application of Clapeyron's theorem maximum up to three spans and two unknown support moment only, Support at same level spans having same and uniform moment of inertia subjected to concentrated loads and uniformly distributed loads over entire span | |
| 22 | Clapeyron's theorem of three moment (no derivation), Application of Clapeyron's theorem maximum up to three spans and two unknown support moment only, Support at same level spans having same and uniform moment of inertia subjected to concentrated loads and uniformly distributed loads over entire span | |
| 23 | Concept of influence line diagram (ILD) | |
| 24 | Moment distribution method | |
| 25 | Introduction to moment distribution method, sign convention, Carry over factor, stiffness factor, distribution factor. | |
| 26 | Introduction to moment distribution method, sign convention, Carry over factor, stiffness factor, distribution factor. | |
| 27 | Application of moment distribution method to various types of continuous beams subjected to concentrated loads and uniformly distributed load over entire span having same or different moment of inertia, supports at same level, up to three spans and two unknown support moments only | |
| 28 | Application of moment distribution method to various types of continuous beams subjected to concentrated loads and uniformly distributed load over entire span having same or different moment of inertia, supports at same level, up to three spans and two unknown support moments only | |
| 29 | Introduction to portal frames – Symmetrical and unsymmetrical portal frames with the concept of Bays and stories. | |
| 30 | distribution factor. | |
| 31 | Simple trusses | |
| 32 | Types of trusses | |
| 33 | Types of trusses (Simple, Fink, compound fink, French truss, pratt truss, Howe truss, North light truss, King post and Queen post truss) | |
| 34 | Types of trusses (Simple, Fink, compound fink, French truss, pratt truss, Howe truss, North light truss, King post and Queen post truss) | |
| 35 | Calculate support reactions for trusses subjected to point loads at joints | |
| 36 | Calculate support reactions for trusses subjected to point loads at joints | |
| 37 | Calculate forces in members of truss using Method of joints and Method of sections. | |
| 38 | Problem solving | |
| 39 | Question discussion | |
| 40 | Question discussion | |
| 41 | revission | |
| 42 | REVISSION | |
| 43 | QUESTION DISCUSSION | |
| 44 | REVISSION | |
| 45 | QUESTION DISCUSSION | |

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