

SYLLABUS FOR ESTATE ASSISTANT POST

1. **CONSTRUCTION MATERIAL AND BUILDING CONSTRUCTION:** Rocks, Building Stones Bricks & Tiles, Cement, Timber and Wood Based Products, Paints and Varnishes, Metals. Foundations, Walls, Brick Masonry, Stone Masonry, Wall, Arches and Lintels, Mortar & Concrete, Damp Proofing and Water Proofing, Doors, Windows and Ventilators, Roof, Floors, Stairs, Plastering and Pointing.
2. **HYDRAULICS:** Fluids and Properties of fluids, Hydrostatic Pressure, fluid flow and measurement through pipe and open channel, Hydraulic Pumps.
3. **CONCRETE AND STRUCTURES:** Concrete and Properties of Concrete, Concrete Mix Design, chemicals and minerals Admixtures, ordinary and special concrete, Concrete Operation, Placement, Compaction and Curing of concrete, Non Destructive Tests. Stress & strain, Bending Moment & Shear Force, Moment of Inertia, Bending & Shear Stresses in Beams, Slope and Deflection, Columns and trusses.
4. **REINFORCED CONCRETE STRUCTURES:** Reinforcement, Theory of RCC Beams, Bonds in RCC Beams, Singly & Doubly RCC Beams, RCC Slabs, Reinforced Brick Works and Columns, Column & Wall Footing, Introduction to Pre-stressed Concrete.
5. **STEEL STRUCTURES:** Structural Steel Sections, Bolted & welded Connections, Tension, Compression and Beam Members, Roof Trusses, Column Bases.
6. **SURVEYING:** Chain & Compass Surveying, Levelling using Dumpy and IOP Level, Plane Table Surveying, Contouring, Theodolite Surveying, Tachometric surveying, Curves.
7. **IRRIGATION ENGINEERING:** Rainfall and Run off, Crops water requirements, Irrigation and Methods of irrigation, Canal Works, Canal Head Works and Regulatory Works, Cross Drainage Works, River Training Works, Dams, Water logging and Drainage and Ground Water Re-charge.
8. **TRANSPORTATION ENGINEERING:** Road Geometrics, Highway Alignment, Highway Surveying, Road Material, Rigid & Flexible Pavements, Road Drainage and Maintenance, Road Construction Equipment. Indian Railways, Railway surveys, Rails & Rail Fastenings, Sleepers, Ballast, Crossings and signalling, Maintenance of track, Station and yards, Classification of Bridges, Components of **Bridges**, Maintenance of Bridges.
9. **SOIL MECHANICS:** Physical Properties of soil and Soil classification, Water flow through soil and Soil Deformation, Strength Characteristics of soil and Soil Compaction, Bearing Capacity and Site Exploration, shallow and deep foundation.
10. **ESTIMATION AND COSTING:** Estimation and Types of estimation, Analysis of Rates, Irrigation Work Estimation, Road Work Estimation and Valuation.
11. **APPLIED MECHANICS:** Laws of forces, Concept of moment, Principle of moment and its applications, Friction, Centre of Gravity, Simple and compound machine.
12. **WATER SUPPLY & WASTE WATER ENGINEERING:** Quality & Quantity of Water, Introduction to Water Treatment, Laying of Pipes, Building Water Supply, Sewerage System, Laying and Construction of Sewers, Sewage Characteristics, Sewerage Disposal & Treatment, Building Drainage.
13. **CONSTRUCTION MANAGEMENT:** Construction Planning, Scheduling & management, Site Organization, Construction Labour, Control of Progress, Inspection and Quality Control, Accidents and Safety in Construction, Public Work Accounts.
14. **Basic Knowledge of Refrigeration and Air Conditioning:** Basic concepts and principles of refrigeration: Refrigeration methods. Air refrigeration cycle, vapour

compression cycle, simple vapour absorption cycle, their applications and limitations. Refrigerants: Important properties of refrigerants, properties and applications of commonly used refrigerants such as R11, R12, R22, NH₃ etc

15. Basic Knowledge of computer work: The candidate should be proficient in using web browsers and MS office tools such as MS Word, Excel etc.

16. Basic knowledge of Electrical Engg.: DC Circuits . Ohm's law, Kirchoff's law, Electromagnetic induction . Faraday's laws, Single phase and Three phase circuits, Real and Reactive Power, Power factor, Measurement of electrical quantities like voltage, current, power and energy and frequency. AC machines . induction motors, synchronous generators, synchronous speed, frequency of generated voltage, Domestic wiring, service mains, meter board and distribution board, fuse and miniature circuit breakers. Precaution against electric shock

17. LIST OF PRACTICAL TESTS FOR THE POST OF ESTATE ASSISTANT:

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| 1. | Determination of water for cement paste of normal consistency |
| 2. | Determination of initial and final setting time of cement |
| 3. | Verification of soundness of cement |
| 4. | Determination of compressive strength of cement |
| 5. | Determination of flakiness index and elongation Index of coarse aggregate |
| 6. | Determination of specific gravity and water-absorption of the aggregate |
| 7. | Determination of bulk-density and voids in aggregates |
| 8. | Determination of particle-size distributed of fine, coarse and all-in-aggregate by sieve-analysis |
| 9. | Test for workability (slump test) |
| 10. | Test for workability (compacting Factor Test) |
| 11. | Determination of compressive strength of concrete by Cube |
| 12. | California Bearing Ratio Value |
| 13. | Penetration value of Bitumen |
| 14. | Softening Point of Bitumen |
| 15. | Ductility of Bitumen |
| 16. | Viscosity of Bituminous materials |
| 17. | Flash and Fire Point of Bituminous materials |
| 18. | Liquid Limit and Plastic Limit Tests |
| 19. | Grain Size Analysis |
| 20. | Classification of Soil |