

नेपाल विद्युत प्राधिकरण

प्राविधिक सेवा, मेकानिकल समूह, तह-९, उप प्रबन्धक पदको
खुला तथा आन्तरिक प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

द्वितीय पत्र: सेवा सम्बन्धी विस्तृत ज्ञान

खण्ड क: (२X१५=३०, १X२०=२०) - ५० अंक

1. Hydropower engineering

- 1.1. History and development of water power in Nepal and world
- 1.2. Types of power plant: run-of-river, storage, pumped storage
- 1.3. Classification of hydropower plant: large, medium, small, mini and micro hydropower plants
- 1.4. Safety measures and precautions applied in power plant
- 1.5. Environmental impact of hydropower plant

2. Water turbines

- 2.1. Classification of turbines on various criteria
- 2.2. Main components of turbines and their functions
- 2.3. Working principle of turbines and their efficiencies
- 2.4. Specific speed of a turbine
- 2.5. Selection of turbines

3. Water turbine governors

- 3.1. Types and working principles
- 3.2. Operation and maintenance

4. Hydro-mechanical equipment

- 4.1. Types, selection, use and design of gates, seals, hoisting equipment and valves
- 4.2. Use and design of trash rack and safety rack
- 4.3. Design, selection of penstock and accessories

5. Power plant instruments

- 5.1. Measurement of pressure, flow, temperature, speed, voltage, ampere, power and energy
- 5.2. Types of communication used in utilities and their application

खण्ड ख: (२X१५=३०, १X२०=२०) - ५० अंक

6. Transmission and distribution

-Types and selection of poles and towers used in different voltage level and their design criteria

7. Safety engineering

- 7.1. Safety rules and regulations for handling explosive, compressive gases and flammable substance
- 7.2. Physical effects of electric shocks, safety and precaution, safety tools and devices, live line maintenance and precautions
- 7.3. First aid requirement after shock treatment
- 7.4. Fire hazards: firefighting techniques and equipment
- 7.5. Noise hazards: sources, control and effect on health

8. Maintenance management

- 8.1. Types of maintenance systems: breakdown, preventive, proactive
- 8.2. Failure analysis
- 8.3. Conditioning monitoring maintenance planning and control
- 8.4. Equipment and tools used in maintenance

- 8.5. Maintenance management of equipment in hydropower plant
- 8.6. Maintenance management of equipment in diesel power plant
- 8.7. Maintenance management of construction equipment

9. Engineering economics

- 9.1. Cash flow analysis, project evaluation indicators
- 9.2. Project evaluation methods
- 9.3. Criteria for capital investment decision, risk analysis
- 9.4. Taxation system in Nepal, energy tariff and regulatory issues

10. Contract management

- 11.1. Familiarization with procurement guidelines and standards of World Bank, ADB
- 11.2. Preparation of contract documents, specifications, condition of contract and other contractual procedures
- 11.3. Arbitration

11. International treaties and conventions

Treaty between the then Government of Nepal and Government of India concerning the integrated development of Mahakali river including Sarada Barrage, Tanakpur Barrage and Pancheshwor Project

12. Service related manuals

- 13.1 Safety guidelines/standards for electricity generation, transmission and distribution of hydropower projects
- 13.2 Manual for preparing environmental management plan (EPM) for hydropower projects
- 13.3 National environmental impact assessment guidelines 1993

