

नेपाल विद्युत प्राधिकरण

प्राविधिक सेवा, मेकानिकल समूह/उपसमूह तह-१० प्रवन्धक पदको
खुला तथा आन्तरिक प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

द्वितीय पत्र: सेवा सम्बन्धी बिस्तृत ज्ञान (१०० पूर्णाङ्क)

खण्ड क: (२×१५=३०, १×२०=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. Hydro Power Station

- 2.1. Turbine: types, selection, capacity, speed, equipment layout
- 2.2. Main components of turbine: runner, guide and thrust bearings, guide vanes/nozzles, draft tube, others
- 2.3. Governor: type, design criteria, installation and maintenance
- 2.4. Inlet valve: types, design criteria, installation and maintenance
- 2.5. Types, design criteria, installation and maintenance of high pressure oil system, lubricating oil system, cooling water system, drainage and dewatering system, compressed air system, unit braking system, automatic grease lubrication system, oil handling system, air conditioning and ventilation system, fire detection and fire fighting system
- 2.6. Auxiliary equipment: overhead traveling crane, diesel engine generating set
- 2.7. Instrumentation
- 2.8. Penstock: types, design criteria, installation and maintenance
- 2.9. Gate and hosting equipment: types, design criteria, installation and maintenance
- 2.10. Valve: types, design criteria, installation and maintenance

3. Thermal Power Station

- 3.1. Prime mover: types, selection, installation, operation and maintenance
- 3.2. Fuels: types, properties, alternative fuels
- 3.3. Repair and maintenance of equipment of thermal power stations.

4. Transmission Line Tower

Transmission line tower: types, design criteria and maintenance

5. Safety Engineering and Equipment Replacement Policy

- 5.1. Principles of industrial hygiene
- 5.2. Occupational safety and hazard control
- 5.3. System safety
- 5.4. Industrial health and safety
- 5.5. Life cycle costing
- 5.6. Standardization of equipment /Machinery
- 5.7. Equipment /Machinery selection/ alternatives

खण्ड ख: (२×१५=३०, १×२०=२०) - ५० अंक

6. Maintenance Management

- 6.1. Maintenance Management and strategy
- 6.2. Evolution of maintenance
- 6.3. Failure analysis
- 6.4. Maintenance management

7. Contract management

- 7.1. Familiarization with Procurement guidelines and standards of World Bank & Asian Development Bank (WB & ADB)
- 7.2. Preparation of contract documents, specifications, condition of contract and other contractual procedures.
- 7.3. International Standard Bidding Document, National Standard Bidding Document.
- 7.4. Arbitration

8. Engineering Economics

- 8.1. Disbursement scheduling, Cash flow analysis, Time value of money
- 8.2. Project evaluation indicators, IRR, Payback Period and others criterion, choosing the best alternative
- 8.3. Incremental Analysis, Sensitivity & Breakeven Analysis
- 8.4. Risk analysis, Inflation & price change
- 8.5. Rationing limited financial resources between projects
- 8.6. Taxation system in Nepal
- 8.7. Energy tariff schemes and regulatory issues.

9. International Treaty and Conventions

- 9.1. Koshi Agreement, 1954/1966
- 9.2. Gandak Agreement, 1959
- 9.3. Electricity Exchange 1961

- 9.4. Treaty between the Government of Nepal and Government of India concerning the integrated development of Mahakali river including Sarada Barrage, Tanakpur Barrage and Pancheswar Project.

10. Service Related Manuals

- 10.1. Manual for public Involvement in Environmental Impact Assessment (EIA) process of Hydropower Projects
- 10.2. Manual for preparing Terms of Reference (TOR) for environmental Impact Assessment, (EIA) of Hydropower Projects
- 10.3. Manual for preparing Scoping Document for Environmental Impact Assessment (EIA) of Hydro power Projects,
- 10.4. Manual for preparing Environmental Management Plan (EPM) for Hydropower Projects
- 10.5. National Environmental Impact Assessment Guidelines, 1993,
- 10.6. Safety Guidelines and Standards for Generation, Transmission and Distribution of Hydro Electricity.

The end