

लोक सेवा आयोग
नेपाल इञ्जिनियरिङ्ग सेवा, सिभिल समूह, जनरल उपसमूहको राजपत्राङ्कित तृतीय श्रेणी पदको खुला र
आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

द्वितीय पत्र :- जनरल सम्बन्धी विषय

- 1. Transportation and Trail Bridge. 30 %**
- 1.1. Transportation system and its classification.
 - 1.2. Transportation planning: rationale, types and its philosophy.
 - 1.3. Road transport and road construction in Nepal.
 - 1.4. Classification of roads in Nepal (NRS and IRC)
 - 1.5. General principles of road network planning.
 - 1.6. Feasibility study of road projects.
 - 1.7. Alignment, engineering survey and its stages.
 - 1.8. Geometric design of roads: map study, element of cross-section and highway alignment, design of horizontal curve, super elevation, transition curve, vertical curves, right of way.
 - 1.9. Drainage consideration in roads:
 - 1.9.1. Introduction and design of culverts and minor bridges, cross drainage structures, subsurface drainage system.
 - 1.10. Special consideration in Hill roads design:
 - 1.10.1. Problems associated with hill roads construction
 - 1.10.2. Route location, hairpin bends and special structures.
 - 1.11. Road Pavement: Types of pavement and their applicability in hill roads, Design of pavement,
 - 1.12. Bioengineering practices along hill side
 - 1.13. Activities and techniques in road construction in rural roads
 - 1.14. Maintenance, repair and rehabilitation of roads.
 - 1.15. Basic knowledge on design, construction and maintenance of suspended and suspension bridge in Nepal.
 - 1.16. Role of social mobilization in rural road development.
 - 1.17. Low-cost road construction
- 2. Water Supply and Sanitation. 20%**
- 2.1 Rural and community based water supply system.
 - 2.2 Water supply sources and their management.
 - 2.2.1 Surface water
 - 2.2.2 Ground water
 - 2.3 Selection of source.
 - 2.4 Water quality and treatment, water demand and supply, source protection
 - 2.5 Intakes, collection chamber and break pressure tanks.
 - 2.6 Reservoir and distribution system.
 - 2.7 Intakes, Pipeline design, design of transmission and distribution system, reservoir design.
 - 2.8 Pipe and fittings: Pipe materials, pipe laying and fittings.
 - 2.9 Operation and maintenance of water supply systems
 - 2.10 Sanitation, wastewater and solid waste management:
 - 2.10.1 On-site sanitation system
 - 2.10.2 Types of sewerage system, design and construction of sewers.

- 2.10.3 Types, characteristics, sources, quantity, generation, collection, transportation and disposal of solid wastes.
- 2.10.4 Sanitary landfill, incineration, composting etc.
- 2.11 Environmental health engineering- Epidemiology, pathogens (Bacteria, Virus, Helminthes, Protozoa)

3. Energy System 10%

- 3.1 Hydrological study, planning and design of small hydropower projects.
- 3.2 Head works, dams, spillways, surge tanks, stilling basin etc.
- 3.3 River diversion works.
- 3.4 Biogas- Introduction.
- 3.5 Alternative energy systems in Nepal

4. Irrigation and River training works. 20%

- 4.1 Status of irrigation development in Nepal.
- 4.2 Methods of irrigation and their suitability.
- 4.3 Design of irrigation canals.
- 4.4 Operation and maintenance of irrigation systems
- 4.5 Management of Farmers managed irrigation system.
- 4.6 Preventive and remedial measures of water logging.
- 4.7 Flood control, its necessity and flood mitigation measures.
- 4.8 River training works.
- 4.9 Specific considerations in design, operation and management of hill irrigation systems

5. Housing, building and urban planning. 10%

- 5.1 Present status and practices of building construction in Nepal
- 5.2 Specific considerations in design and construction of buildings in Nepal
- 5.3 Indigenous technology in building design and construction
- 5.4 Local and Modern building construction material in Nepal
- 5.5 Community buildings: School and hospital buildings and their design considerations
- 5.6 Urban planning needs and challenges in Nepal.

6. Technology, Environment and civil society. 10%

- 6.1 Technological development in Nepal.
 - 6.2 Promotion of local technology and its adaptation
 - 6.3 Environmental Impact Assessment, Initial Environmental Examination, Global-warming phenomena.
 - 6.4 Types of sources of pollution: point / non-point (for air and water)
 - 6.5 Social mobilization in local infrastructure development and utilization in Nepal.
 - 6.6 Participatory approach in planning, implementation, maintenance and operation of local infrastructure
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द्वितीय पत्रको एकाईहरूको प्रश्नसंख्या निम्नानुसार हुनेछ

द्वितीय पत्रका एकाई	1	2	3	4	5	6
प्रश्न संख्या	3	2	1	2	1	1

विषयगत नमूना प्रश्नहरू (Sample questions)

1. Explain the general road classification systems based on NRS-2050. Define four different types of road network system used by road development sector in Nepal based on functional importance?
2. What are the design and construction problems of hill roads? What special considerations need to be done in the selection of alignment for roads in high altitude mountainous region?
3. Write differences between suspension and suspended trial bridge. Explain briefly the factors influencing the cable tension in design of a cable?
4. Determine the storage capacity of a reservoir for a daily requirement of 2, 25,000 litres. The pumping rate is 8 hours (8 AM to 4 PM) constantly. The draw-off is as follows:
7AM – 8 AM = 30 % of daily supply.
8AM – 5 PM = 35 % of daily supply.
5 PM – 6:30 PM = 30% of daily supply.
6:30 PM – 7 AM = 5% of daily supply.
5. Describe the various water borne diseases that are transmitted through polluted water. Explain their transmission routes and preventive measures.
6. Has technology brought changes in education and employment opportunity of Nepal? Discuss.
7. Describe various types of river training and protection works.
8. Write Short Notes on:
 - (a) Farmers managed irrigation system
 - (b) Specific consideration in design of buildings in Nepal.
9. Briefly Explain the following:
 - (a) Remedial measures of water logging
 - (b) Indigenous technology in building designs.
10.
 - (a) Calculate the hydropower potential of a river having average discharge of 10 cumecs for an available head of 10 m. The efficiency of turbine is estimated to be 90 percent.
 - (b) What do you mean by renewable energy? Write brief notes on biogas and its potential for development in Nepalese context.