

## प्रदेश लोक सेवा आयोग, मधेश प्रदेश

जनकपुरधाम ।

इन्जिनियरिङ्ग सेवा, सिमिल समूह, जनरल, हाईवे, इरिगेशन, स्यानिटरी उप-समूह, अधिकृत सातौ तह वा सो सरह पदको खुला प्रतियोगितात्मक लिखित परीक्षा

२०८०/०६/१३

समय : ३ घण्टा

पत्र : द्वितीय

पूर्णाङ्क : १००

विषय : Technical Subject

निम्न प्रश्नहरूको उत्तर छुट्टाछुट्टै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तरपुस्तिका रद्द हुनेछ ।

### Section – A

1. As per Nepal National Building code, elaborate on characteristics and requirements of Earthquake resistant building. What are the pertinent factors to be considered in structural design? [10]
2. Discuss the various causes of slope movement and failure. Explain different ways of stabilizing slopes. [4+6=10]
3. What is bearing capacity of soil? What are the factors that affect the bearing capacity? What are the different design types that are usually selected for shallow as well as deep foundations? [5]
4. Describe the advantages of providing closed box shape in hollow box Girder Bridge and show the arrangement of closed box shape girder through a free hand diagram. [5]

### Section – B

5. A. In the Terai region on Nepal, there is heavy damages to the life and property due to frequent floods. Give major reasons to such damages and possible measures to address the issues in a sustainable manner.  
B. Where do we provide Guide Banks? Discuss on the design concept of Guide Banks. [5+5=10]
6. What do you mean by Duty of Water? Explain the influence of several factors which affects duty and how duty of water can be improved. [10]
7. What is a hydrograph? Explain the use of hydrograph in rainfall assessment? [5]

### Section – C

8. Compare the rigid and flexible road pavement from various criteria. [10]
9. What are the desirable properties of bituminous mixes? Briefly explain the ductility test of bitumen and its engineering application. [10]
10. What are the factors to consider in site selection of Airport? [5]

### Section – D

11. What are the merits and demerits of slow sand filter and rapid gravity filter? Please compare on the basis of suitability, design and operation. [10]
12. Describe the process of initial environmental examination (IEE) of a municipal solid waste management project. [10]