

लोक सेवा आयोग

नेपाल इञ्जिनियरिङ्ग सेवा, सिभिल समूह अर्न्तगतका जनरल, हाईवे, स्यानीटरी, इरिगेशन, हाइड्रोलोजी समूह, राजपत्र अनङ्कित प्रथम श्रेणी, (प्राविधिक) पदको प्रतियोगितात्मक लिखित परीक्षा
मिति: २०७९/११/३०

समय: २ घण्टा १५ मिनेट

पूर्णाङ्क : १००

पत्र:- द्वितीय

विषय:- सेवा सम्बन्धित कार्य-ज्ञान

निम्न प्रश्नहरूको उत्तर Section अनुसार छुट्टाछुट्टै उत्तरपुस्तिकामा लेख्नुपर्नेछ ।

Section - A

50 Marks

1. What is contouring? What factors affect the contour interval? State. 5
2. Mention the different types of cement used in construction industry and highlight their specific use during construction. 5
3. Draw the shear force (SF) and bending moment (BM) diagrams for a simply supported beam of length 'L' carrying a uniformly distributed load 'w' per unit length which occurs across the whole beam. 5
4. Introduce pressure energy, kinetic energy and potential energy in pipe flow. 5
5. Define ultimate bearing capacity of soil. How do you calculate safe bearing capacity from ultimate bearing capacity? What is allowable bearing pressure? Mention. 5
6. Write down different types of shear reinforcement in a RCC section and briefly explain the steps of shear reinforcement design. 5
7. Explain the different types of correction in chain survey. Find the sag correction of 30m steel tape under a pull of 8kg in three equal spans of 10m each.
weight of 1 cum of steel = 7.86 g
Area of cross section of tape = 0.10 sqm
 $\frac{PL}{AE}$ 5+5=10
8. Explain in brief the design considerations in two-way slabs according to IS code. Also, introduce under reinforced and over reinforced sections with their suitability. 5+5=10

Section - B

50 Marks

9. What are the main factors affecting strength of concrete? What is curing of concrete and its importance? Write down. 5
10. Explain the different factors to be considered during selection of water source to provide drinking water facility to municipal population. Again, state the methods of determining storage tank capacity as well. 5
11. "Irrigation is a necessity for agricultural production, but sometimes irrigation may create adverse situations for crops, environment and living things." Justify this statement. 5
12. According to the Nepal Road Standard, what are the classifications of road in Nepal? Describe. 5
13. According to prevailing Financial Act and Regulation of Government of Nepal, list out the procedural steps for preparing rate analysis and the cost estimation for civil works. 5
14. Explain about the historic developments of airports in Nepal. 5
15. Design an irrigation canal section to irrigate 12750 ha of agricultural land with a duty of 850 ha/m³/sec. Assume the canal to be in non-erodible material for a maximum permissible velocity of 0.8 m/s with longitudinal slope of 1 in 4000, side slope of 1:1 and Manning's "n" being equal to 0.025. 10
16. What are the basic requirements of road alignment? What do you mean by superelevation? How is it different from camber? Write down the significance of superelevation. 10