

Mid-West University
Examinations Management Office

End Semester Examinations 2081

Bachelor level/ B.E. Hydropower/ 6th Semester

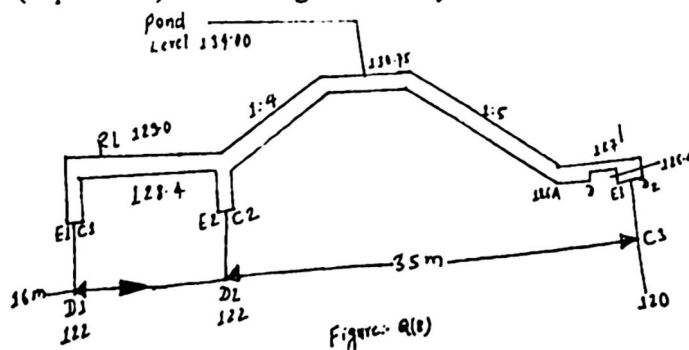
Time: 3 hours

Subject: Irrigation and Drainage Engineering (HE468/HE330)

Full Marks: 50

Pass Marks: 25

- Attempt all the questions
 - Figures in the margin indicate full marks.
 - Assume suitable values, with a stipulation, if necessary.
 - Candidates are required to answer the questions in their own words as far as possible.
1. Explain the importance of irrigation development in Nepal. What are the problems and challenges of irrigation development in the hills of Nepal? [4]
 2. From the following data, Find the field Capacity of soil. [5]
 Depth of root Zone = 2 m, Present water content = 5%,
 Dry density of Soil = 15 KN/m³, Area of plot = 1000m²
 Water applied to the soil = 500m³. Water loss due to evaporation = 10%
 3. Explain the components of a Canal Irrigation systems. Also explain the head works of canal with sketch. [2+3]
 4. Prove using Lacey's theory that $P = 4.75(Q)^{0.5}$. [4]
 5. Using Kennedy's determine the dimensions of section of an irrigation canal for the following data: B/D ratio = 11.50, $m = 1.03$, $Q = 30\text{m}^3/\text{sec.}$, Side slope (H:V) = 0.5: 1(n:1). [4]
 6. Design crest, length and thickness of impervious floor of a Sarada type fall of Vertical drop structure for following data: Discharge = 20 m³/sec., Bed Level U/P = 155.15 m, Side slope of channel = 1:1, Bed level D/S = 154.45 m, FSL U/S = 156.10 m, Bed width of crest = 0.55 m (for initial assumption), $C_d = 0.415$, Specific gravity of Masonry drop = 2.25, Bligh's coefficient (C) = 6.0. [8]
 7. Why drip and sprinkler methods are considered as best alternative irrigation methods in hilly region? Explain with its suitability and advantage. [6]
 8. Using Khosla's Method, check the safety of weir profile shown below against piping and uplift (at point 'A'). Safe exit gradient may be assumed to be 1 in 5. [8]



9. What is meant by water-logging? Write down causes and effects of water-logging in a canal irrigated farm. Explain the features of FMIS for small irrigation system. [1+3+2]

The End