Code No:**R1641012** **R16** **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, February- 2020

WATER RESOURCES ENGINEERING - II

(Civil Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B
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PART–A*(14 Marks)*

1. a) What are the factors affecting duty. [2]
   b) What are the advantages of canal lining? [2]
   c) What do you understand by flexibility of an outlet? [2]
   d) Write a short note on 'Fish ladder' and 'Divide wall'. [2]
   e) What do you mean by elementary profile of gravity dam? [3]
   f) Explain with the help of a sketch, the components of a zoned embankment dam. [3]

PART–B*(4x14 = 56 Marks)*

2. a) Explain how depth and frequency of irrigation is determined. [7]
   b) Discuss in brief the benefits and ill-effects of irrigation [7]

3. a) The following data refer to an irrigation canal [9]
   Bed width = 1.0m,
   Side slopes = 2:1 (in filling) and 1:1 (in cutting)
   Top width of embankment on either side of canal = 3 m
   Fully supply depth = 5m
   Free board = 1 m
   Determine the balancing depth. Draw a neat cross-section of the canal illustrating the various dimensions and the levels.
   b) Describe Kennedy's silt theory. What are the drawbacks in this theory? [5]

4. a) Discuss the design principles of Sarda type fall [5]
   b) Describe with the help of sketches various types of cross-drainage works [9]

5. a) Describe in brief various types of weirs. Distinguish clearly between weir and barrage. [8]
   b) Differentiate between 'slit extractor' and 'silt ejector'. [6]

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6. a) Explain the procedure to estimate capacity of a reservoir using mass curve. [5]
   b) The following Fig 2 Show the section of gravity dam built of concrete. [9]
   Calculate (neglect earthquake effect).

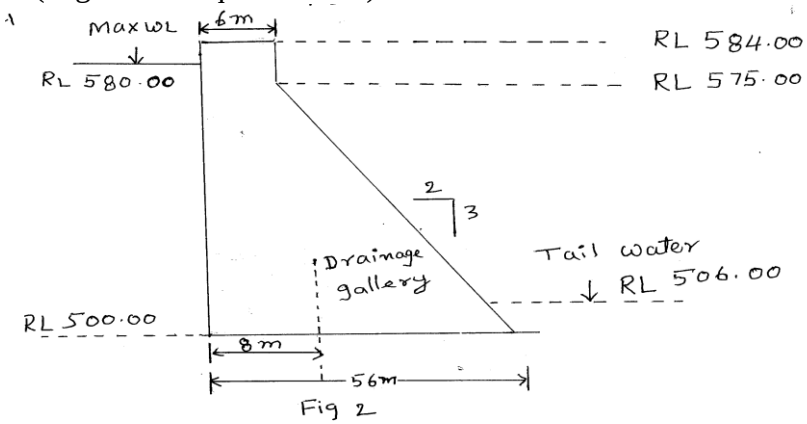


Fig 2

(i) The maximum vertical stress at the heel and toe of the dam.
(ii) The major principal stress at the toe of the dam.
Assume weight of concrete =2.4 tones /m^3

7. a) Enumerate the different types of spillways with neat sketches. [10]
   b) Write a note on U.S.B.R drum gate. [4]

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