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Code No: **RT41014** **R13** **Set No.1**

IV B.Tech I Semester Supplementary Examinations, March - 2017

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 THREE questions from Part-B

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PART–A (22 Marks)

1. a) Explain about factors affecting duty? [4]
   b) Write about balancing depth of cutting. [3]
   c) Define fall and its necessity and location of falls. [4]
   d) Sketch the layout of diversion head works. [4]
   e) Explain the terms : i) Dead storage ii) Useful storage iii) Surcharge storage: and iv) Bank storage [4]
   f) What is a spillway? What are its essential requirements? [3]

PART–B (3x16 = 48 Marks)

2. a) What are the factors affecting duty of water? [8]
   b) The culturable commanded area for a distributor is 16,000 hectares. The intensity of irrigation (I.I.) for Rabi (wheat) is 50% and for Kharif (rice) is 20%. If the total water requirement of the two crops are 37.5 cm and 120 cm and their periods of growth are 160 days and 140 days respectively: (a) Determine the outlet discharge from average demand considerations; (b) also determine the peak demand discharge, assuming that; the kor water depth for two crops are 14 cm. and 20 cm and their kor periods are 4 weeks and 2 weeks respectively. [8]

3. a) Describe Kennedy's theory for the design of irrigation channel in alluvial soil. [8]
   b) Using Lacey's theory, design an irrigation channel in alluvial soil with the following data: Full supply discharge = 15 cumec, Lacey's silt factor = 0.9 and side slopes: 0.5H:IV [8]

4. a) What are canal falls and why are they constructed? [8]
   b) Write in detail about sarada type fall and straight glacis fall. [8]

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5. a) Draw a neat sketch of a River – regulator and explain its salient components. [8]
   b) What is meant by "Afflux", how does it effect the design of weirs and barrages? [8]

6. a) Explain how the storage capacity of a reservoir is fixed? [8]
   b) A masonry dam 15 m high is trapezoidal in section with a top width of 2 m and bottom width of 9. 25 m. The face exposed to water has a batter of 1:10. Calculate various factors of safety and comment on the stability of the dam. Assume coefficient of friction as 0.75, sp.wt of masonry as 2240 kg/cum. Permissible shear stress as 14 kg/sq. cm. [8]

7. a) Discuss the classification of earth dams with neat sketches bringing out their relative merits and demerits. [8]
   b) Classify various types of spillways and explain any two spillways. [8]

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