T.E. / Civil / Sem-VI / CBCGS / R-19 / 'C' Scheme / Sub:- WRS
S.H. 2024
Date:- 05/12/2024
QP. Code:- 10068986

Duration: 3hours **Total marks: 80**

Q.1 is COMPULSORY
Attempt any THREE out of remaining questions
Assume suitable data wherever required.

Q.1 Attempt **any FOUR** of the following **(20)**

A. Write a short note on sprinkler irrigation. Also mention its advantage and disadvantages.
B. Describe the various types of earthen dams
C. Define the following: aquifer, aquifuge, aquiclude, cone of depression and drawdown.
D. Write a short note on zones of reservoir?
E. Compare the Kennedy's and Lacey's theories.
F. Write a short note on canal falls.

Q.2. A.i. Explain any one recording type rain gauge, along with a neat diagram **(05)**
A.ii. Define runoff and explain the factors affecting runoff **(05)**
B. The ordinates of 8-h unit hydrograph for a drainage basin are given below. Obtain 24- hr UH **(10)**

Time (hours)	0	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76
Ordinates of 8-h UH	0	6	15	30	18	75	153	199	207	144	98	56	37	29	22	17	14	9	3	0

Q.3. A.i Define duty and delta. Derive the relation between duty, delta and base period **(05)**
A.ii. Write a short note on drip irrigation. **(05)**

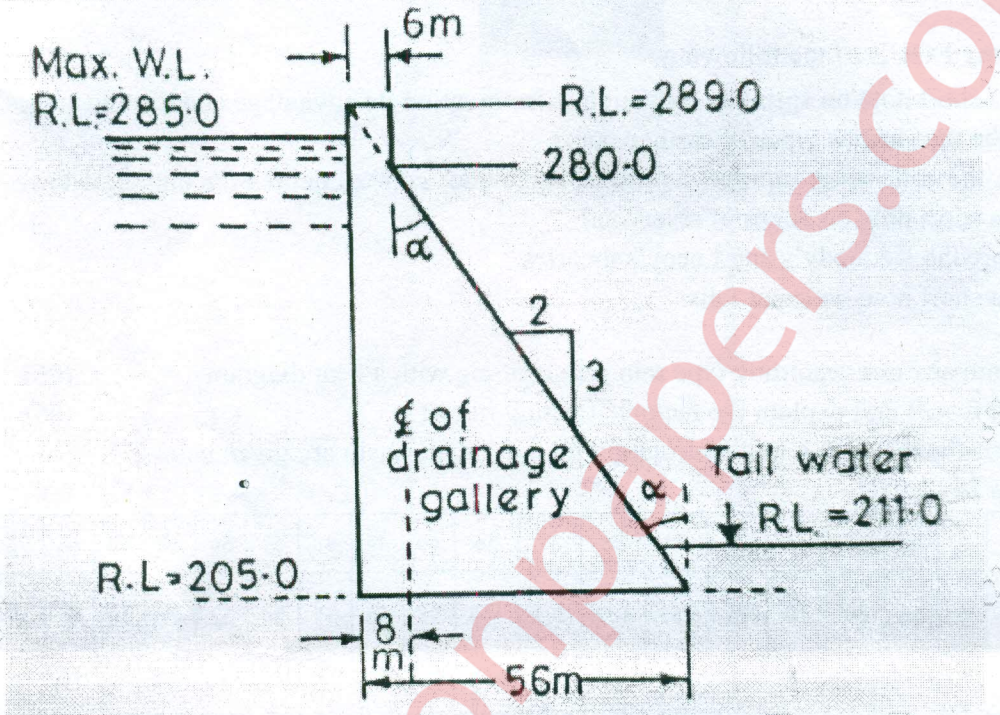
B. The culturable command area for a distributor is 15000 hectares. The intensity of irrigation for Rabi crop is 40% and for Kharif crop is 15%. If the total water requirement of the two crops are 37.5cm and 120cm and their periods of growth are 160 days and 140 days respectively. Determine the outlet discharge from average demand considerations. Also determine the peak demand discharge assuming that the kor water depth for two crops are 13.5cm and 19cm and their kor periods are 4 weeks and 2 weeks respectively. **(10)**

Q.4. A. i. Differentiate between open well and tube well **(5)**
A.ii. Write a short note on aquifer tests **(5)**

Q4.B. A 30 cm diameter well penetrates 25m below the static watertable. After 24hrs of pumping at 5400 litres/min, the water level in a test well 90 m away is lowered by 0.53 m and in a well 30m away is lowered by 1.11m What is the transmissibility of the aquifer? Also calculate the drawdown in the main well. **(10)**

Q5.A. Explain in detail the various forces acting on a gravity dam. Also draw a neat diagram **(10)**

Q5.B. For the gravity dam shown in figure, calculate the (i) maximum vertical stresses at the heel and toe of dam (ii) major principal stress at the toe of dam (iii) the intensity of shear stress on a horizontal plane near the toe **(10)**



Q.6. A. (i) Describe spillways, their purpose and their types **(05)**

A (ii) Define canal lining, water logging, head regulator, canal escapes and reservoir sedimentation. **(05)**

B. Describe with the help of sketches various types of Cross Drainage Work. **(10)**

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