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**B.E / B.Tech. (Full Time) DEGREE ARREAR EXAMINATION, NOV / DEC 2011**  
**AGRICULTURAL AND IRRIGATION ENGINEERING BRANCH**  
**V SEMESTER – (REGULATIONS 2008)**  
**AI 9301 – IRRIGATION ENGINEERING**

Time : 3 hours.

Max Marks: 100

Answer ALL Questions

Part – A (10 x 2 = 20 Marks)

1. Highlight the need for irrigation with any of its advantages,
2. How many hectare of paddy can be irrigated to satisfy a field duty and delta of 108 cm of water over a base period of 100 days, when the canal is maintained at 125 cumec.
3. Distinguish between shallow and deep wells.
4. Give four examples wet and dry crops.
5. State the reasons that earth dams have been and still continue to be in very common use.
6. Compare Weir with Barrage.
7. Distinguish between storage headwork's and diversion headwork's.
8. What happen when the river in trough stage?
9. What is meant by Kudimaramath?
10. What is a Water Users Association?

Part – B (5 x 16 = 80 Marks)

11. i) Intensity of irrigation, duties and base periods of various crops under a palar canal system are given in the Table below. If reservoir losses are 10% and conveyance in canal system 20%. Find out the storage capacity of the dam. (12)

| Crop                             | Wheat | Sugarcane | Cotton | Rice | Vegetables |
|----------------------------------|-------|-----------|--------|------|------------|
| Base Period (days)               | 120   | 330       | 210    | 130  | 100        |
| Duty (hectare/cumec)             | 1800  | 800       | 1200   | 800  | 700        |
| Area under each crop in hectares | 5400  | 6000      | 3000   | 3000 | 1500       |

- ii) The monthly consumptive use values for paddy are tabulated in Table. Calculate the total consumptive use. What is the average monthly consumptive use and peak monthly consumptive use? (4)

| Month | Date | Rice (clay soil)<br>C <sub>v</sub> in cm |
|-------|------|------------------------------------------|
| June  | 1-30 | 28.73                                    |
| July  | 1-12 | 8.76                                     |

|           |       |       |
|-----------|-------|-------|
| July      | 13-31 | 15.34 |
| August    | 1-31  | 22.73 |
| September | 1-30  | 21.29 |
| October   | 1-31  | 25.50 |
| November  | 1-24  | 15.06 |

12. a. 1 Explain briefly various surface method of distribution of water to field with a neat sketch. (12)  
 ii) Write down the advantage and disadvantage of drip irrigation method. (4)

Or

- b. 1) Write Short note on following with a sketch- a) Doon, b) Swinging basket, c) Mote d) Denkli. (12)  
 ii) Write down the advantage and disadvantage of sprinkler method of irrigation (4)
13. a. i) What is weir? Explain the different types of weirs? (7)  
 ii) Design the practical profile of a gravity dam of cement concrete. R.L. of base of dam 100 m, R.L. of level HFL 200 m, free board as 3 m, unit weight of water as 10, Max allowable compressive stress in concrete  $30 \text{ kg/cm}^2$ , specific gravity of cement concrete is 2.5, ht of waves as 0.9 m and assume the density of water. (5)  
 iii) What are different types of arch dam? Explain any one of them in details. (4)

Or

- b. i) What are the different types of earth dams that are usually adopted. Explain each type with a neat sketch (12)  
 ii) Explain the practical profile of a gravity dam. (4)

14. a. i) Draw a neat sketch of a diversion head work and name its various parts. Give brief explanation on each parts. (16)

Or

- b. i) Describe an ogee and trapezoidal Notch fall with neat sketch. (7)  
 ii) With a neat sketch explain about aqueduct and level crossing. (7)  
 iii) What do you understand by the term scouring sluices? (2)

15. a. i) Explain briefly the irrigation development before independence during pre-historic times in India. (16)

Or

- b. i) Describe briefly Artificial methods of rainwater harvesting with neat sketch- Absorption pit method, Absorption well method, Well cum bore method (10)  
 ii) Write briefly about Warabandi system of scheduling water for irrigation (4)  
 iii) Draw the neat sketch of structure of PSC and FC of farmer's organization (2)