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**B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2013**

**AGRICULTURAL AND IRRIGATION ENGINEERING**

V Semester

10

**A19301-Irrigation Engineering**

(Regulation 2008)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

**PART-A (10 x 2 = 20 Marks)**

1. Explain the cropping seasons with examples.
2. Find the delta for a crop when its duty is 920 hectares/cumec on the field and the base period of this crop is 120 days.
3. Classify the wells based on the availability of the Mota formation.
4. How to estimate the water application rate in the Sprinkler irrigation systems?
5. How to determine the type of Gravity dam based on its height?
6. Write down the design procedure of arch dams using the trial load method.
7. What are the main functions of canal head and cross regulators?
8. Classify the Cross – drainage works.
9. Write down the needs of optimum use of water.
10. What are the principles of PIM

**Part – B ( 5 x 16 = 80 marks)**

11. (i) A stream of 160 litres per second was diverted from a canal and 120 litres per sec were delivered to the field. An area of 1.7 ha was irrigated in 8 hours. The effective depth of the root zone was 2m. The runoff loss in the field was 450 Cu.m. The depth of the water penetration varied linearly from 1.8m at the head end of the field to 1.2m at the tail end. Available moisture holding capacity of the soil is 25cm per metre depth of the soil. It is required to determine the water conveyance efficiency, Water application efficiency, Water storage efficiency and Water distribution efficiency. Irrigation was started at a moisture extraction level of 50% of the available moisture (10)
- (ii) Wheat is to be grown at a certain place, the useful climatological conditions of which are tabulated below. Determine the ET and Consumptive Irrigation Requirement of wheat crop. Also determine the Field Irrigation Requirement if the Water application efficiency is 60 %. Take the crop factor equal to 0.8. (6)

Month	Monthly Temperature in °C averaged over the last 5 years	Monthly % of day time hour of year computed from the Sun shine tables	Useful rainfall in cm averaged over the last five years
NOV	18.0	7.20	1.7
DEC	15.0	7.15	1.42
JAN	13.5	7.30	3.01
FEB	14.5	7.10	2.25

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12. a) (i) Explain briefly about the flooding methods. (10)  
(ii) Describe the methods of tubewell development. (6)

(OR)

- b) (i) Explain the design procedure involved in the sprinkler irrigation system. (10)  
(ii) Write short notes on the components of the Drip irrigation systems. (6)

13. a) (i) Explain briefly the forces acting on the gravity dams (12)  
(ii) Describe the possible structural failures in case of the earthen dams (4)

(OR)

- b) (i) Explain briefly about the types of Spillways. (8)  
(ii) Explain the Arch dams with its types. (8)

14. a) (i) Explain briefly about the Canal drops with its types. (10)  
(ii) Explain the aqueduct with its types. (6)

(OR)

- b) (i) Differentiate the Super passage with Syphon super passage. (4)  
(ii) Explain briefly about the River training works. (12)

15. a) (i) Explain about the On-Farm development works with its components. (4)  
(ii) Explain briefly about the methods for improving the canal irrigation management. (12)

(OR)

- b) (i) Describe the impact of WUA'S formation in the Irrigation water Management (10)  
(ii) What are the objectives and needs of the Participatory Irrigation Management (PIM) (6)