

Paper Id: **100702**Roll No:

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B. TECH
(SEM -VII) THEORY EXAMINATION 2019-20
WATER RESOURCES ENGINEERING

Time: 3 Hours

Total Marks: 100

Note: Attempt Sections in any order, but do not attempt any section more than once.

SECTION A

1. Attempt 10 questions in brief. 2 x 10 = 20

- a. Define Furrow and Drip irrigation system.
- b. Write down the relation between Duty and Delta.
- c. Define Outlet Factor.
- d. What is Evapotranspiration?
- e. Define intensity of irrigation.
- f. Explain Lacey's silt factor.
- g. What do you mean by a "Cross-Drainage Works"?
- h. Write a short note on Canal siphon and Aqueduct?
- i. Define silting and scouring in canals.
- j. What is water logging?

SECTION B

2. Attempt any three of the following: 10x3=30

- a. Describe the concept of hydrologic cycle with the help of a neat sketch. What are the different components of the hydrologic cycle? Write down water budget equation for surface flow.
- b. Write a short note on 'synthetic Unit Hydrograph. How will you derive the synthetic unit hydrograph from a number of unit hydrographs? Illustrate the method with suitable example in a tabular form.
- c. What is the problem of water logging? What are the poor effects of water logging? Describe some suitable remedial measures against water logging in brief.
- d. What do you mean by river training works? Describe the various methods used for river training work.
- e. Define the following terms in brief:
 - i. Well losses
 - ii. Specific Capacity
 - iii. Specific yields
 - iv. Well efficiency

SECTION C

3. Attempt any one part of the following: 10x1=10

- a. Write short notes on:
 - i. Intensity - Duration Curve and
 - ii. Probabilistic Maximum Precipitation Curve.
- b. Define surface runoff. Explain the factors affecting the runoff.

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4. Attempt any *one* part of the following: 10x1=10
- a. Describe the various method of irrigation system. Define sprinkler irrigation system with neat sketch.
 - b. What is meant by crop rotation? What are the advantages of crop rotation? Describe in brief with suitable examples.
5. Attempt any *one* part of the following: 10x1=10
- a. Using Lacey's theory, design a trapezoidal irrigation channel (side slope, 1H: 2V) carrying discharge of 40 m³/sec. Take silt factor as 1.0.
 - b. What do you understand by regime channel? Explain the initial regime and final regime of a channel in Lacey's theory.
6. Attempt any *one* part of the following: 10x1=10
- a. What is cross drainage works? What are the various types of cross drainage works?
 - b. Design a concrete lined channel to triangular section to carry a discharge of 45 m³/sec at a slope of 1 in 1000. The side slopes of the channel are 1.5:1 and Manning's roughness coefficient for lining material as 0.018.
7. Attempt any *one* part of the following: 10x1=10
- a. Describe Confined and Unconfined aquifer with suitable diagram. Derive the expression for the discharge through confined aquifer.
 - b. Write short notes on :
 - i. Well shrouding and well development
 - ii. Types of open wells
 - iii. Infiltration galleries.