PAPER ID-310059

Roll No: | | | | | | | | | | | | | |

B.TECH
(SEM VII) THEORY EXAMINATION 2020-21
WATER RESOURCES

Time: 3 Hours   *Total Marks: 70*

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. **Attempt *all* questions in brief.**   **2 x 7 = 14**

a.	What do you mean by Infiltration?
b.	What is the concept of Unit Hydrograph?
c.	Write down the relation between Duty and Delta.
d.	Explain Lacey silt theory.
e.	Why the falls are necessary in canals?
f.	Explain Base period and Crop period.
g.	Discuss the two causes of failure of Earthen dams.

SECTION B

2. **Attempt any *three* of the following:**   **7 x 3 = 21**

a.	A watershed has four rain gauge stations, A, B, C and D. During a storm, rain gauge station A was inoperative, while station B, C, and D, surrounding station A, recorded rainfall of 48 mm, 51 mm and 45 mm respectively. Estimate the missing storm precipitation of station A, using arithmetic mean method.
b.	List the various direct methods of measurement of consumptive use of water.
c.	A water course has a culturable command area of 1200 hectares. The intensity of irrigation of crop A is 40% and for B is 35%, both the crop being Rabi crops. Crop A has a kor period of 20 days and crop B has a kor period of 15 days. Calculate the discharge of water course if the kor depth for crop A is 10 cm and for B it is 16 cm.
d.	Describe 'canal regulation works'. What are the different types of canal regulation works provided? What are the functions of a canal fall?
e.	What do you understand by Gravity Dam? Explain various forces that act on a gravity dam.

SECTION C

3. **Attempt any *one* part of the following:**   **7 x 1 = 7**

(a)	What is S-hydrograph? How would you derive a S-hydrograph? Discuss the procedure of derivation of the unit hydrograph from a S- hydrograph.
(b)	Design an irrigation channel to carry a discharge of 30 cumec by Kennedy's theory. Take B/D ratio as 8.0, N= 0.0225 and m = 1.0.

4. **Attempt any *one* part of the following:**   **7 x 1 = 7**

(a)	Describe different methods of irrigation in brief. What are the advantages and disadvantages of irrigation?

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| (b) | The ordinates of a 3 hour unit hydrograph are following: |

Time (hr)	0	3	6	9	12	15	18	21	24	27	30
Discharge (cumec)	0.0	3.08	4.94	8.64	9.88	7.41	4.94	3.70	2.47	1.23	0.0

Develop a unit hydrograph of 6 hour unit hydrograph.

5. **Attempt any *one* part of the following:** **7 x 1 = 7**

| (a) | Differentiate between Kennedy's and Lacey's theory for design of alluvium channels. Explain defects in Kennedy's theory. |
| (b) | 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. |

6. **Attempt any *one* part of the following:** **7 x 1 = 7**

| (a) | What is cross drainage works? What are the various types of cross drainage works? Differentiate between syphon aqueduct and canal syphon. |
| (b) | Explain with help of a diagram, the various components parts, along with their functions, of a diversion head work also discuss in brief various causes of failure of weirs and their remedies. |

7. **Attempt any *one* part of the following:** **7 x 1 = 7**

| (a) | What is an outlet? Write down the requirements that an outlet should fulfil. Distinguish clearly between non-modular and semi-modular outlets with suitable examples. |
| (b) | Describe in brief various investigation required for reservoir planning also define the following :
 I. Surcharge storage
 II. Valley storage
 III. Safe yield
 IV. Secondary yield |