PAPER ID-310035

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

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

Time: 3 Hours ***Total Marks: 100***

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

SECTION A

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

a.	Define Intensity of Irrigation.
b.	Explain Lacey's silt factor.
c.	What do you meant by consumptive use of water?
d.	Define DUTY and DELTA.
e.	What is Evapotranspiration?
f.	Define silting and scouring.
g.	Explain Well losses and shrouding.
h.	What do you mean by Probable Maximum Precipitation (PMP)?
i.	Explain Base period and Crop period.
j.	Discuss the economic viability of lining of canal.

SECTION B

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

a.	Write a short note on Synthetic Unit Hydrograph.
b.	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.
c.	Differentiate between Kennedy's and Lacey's theory for design of alluvium channels. Explain defects in Kennedy's theory.
d.	Write down the water budget equation for a catchment. Define which type of precipitation generally occurs in India.
e.	Discus the various advantages and disadvantages of irrigation.

SECTION C

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

a.	Using Kennedy's method of channel design; find the dimensions of an irrigation canal to carry a discharge of 1.4 cumecs. Assume N = 0.0225, m = 1 and (B/D) =5.7.
b.	Define the following terms in brief : Aquifer, Well loss. Specific capacity, Specific yield. Efficiency of a well and Interference among wells. Give the expression when it shows the interference between two wells.

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

a.	A tube well of 30cm diameter penetrates fully in an artesian aquifer. The strainer length is 15m. Calculate the yield from the well under a drawdown of 3m. The aquifer consist of sand of effective size of 2.0 mm having coefficient of permeability equal to 50 m/day. Assume radius of drawdown equal to 150 meters.
b.	Explain 'water logging'. What are the various causes of water logging? Describe the

	adverse effects of "water logging" What are the various methods adopted as anti-water logging measures.

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

a.	Determine the optimum number of rain gauges for the a basin with the following data: Number of existing gauges=6 Allowable percentage error = 8% The average rainfall at the existing gauges = 90, 100, 85, 65, 55 and 46 cm.
b.	Describe 'canal regulation works'. What are the different types of canal regulation works provided? What are the functions of a canal fall?

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

a.	Define Well Efficiency. What are the various factors governing the selection of suitable site of a tube-well?
b.	What is the concept of, river training? What do you mean by river training for discharge, river training for depth and river training for sediment? List the various types of river training works and explain any one of them with suitable sketches.

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

a.	Explain semi-module, rigid module and their types. Describe a semi-module consisting of a submerged pipe.
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.