

Roll No:

BTECH

(SEM VII) THEORY EXAMINATION 2024-25

IRRIGATION AND WATER RESOURCE ENGINEERING

TIME: 3 HRS

M.MARKS: 100

Note: Attempt all Sections. In case of any missing data; choose suitably.

	SECTION A						
1.	Attempt all questions in brief.	2 x	10 = 20				
Q no.	Question	CO	Level				
a.	Define precipitation and what are the major forms of precipitation?	1	K1				
b.	Define recording type of rain gauge.	1	K1				
c.	State advantages of lined canals.	2	K1				
d.	State the necessity of irrigation.	2	K1				
e.	Define sediment.	3	K1				
f.	Define cross drainage works.	3	K1				
g.	Write the cause of meandering.	4	K1				
h.	Define a spur.	4	K1				
i.	Define the terms aquiclude and aquitard.	5	K1				
j.	Define Darcy's law and list out the validity of Darcy's law.	5	K1	00			
	SECTION B			24			
2.	Attempt any <i>three</i> of the following:	<u>10 x</u>	x = 3 = 20)			
Q no.	Question	C	Level				
		U	5				

SECTION B

2.	Attempt any <i>three</i> of the following:	J
	interesting the set of the following.	Ψ.

<i>4</i> .	Attempt any <i>unce</i> of the following.	10 /	1 3 - 40
Q no.	Question	С	Level
		0	5
a.	Explain the stages of the hydrologic cycle and their significance in water	1	K2
	resource management.	2	
b.	Explain the components of a hydrograph and their hydrological	2	K2
	significance.		
c.	Design an irrigation channel to carry 35 cumecs of discharge, with B/D	3	
	i.e., base width to depth ratio as 2.25. The critical velocity ratio is 1.0		K2
	and Kutter's rugosity coefficient is 0.022 and use Kennedy's method.		
d.	Discuss the objectives of river training.	4	K2
e.	Describe Confined and Unconfined aquifer with suitable diagram.	5	K2

SECTION C

3.	Attempt any one part of the following:	10 x	x 1 = 10
Q no.	Question	С	Level
		0	
a.	Explain any four factors affecting runoff.	1	K2
b.	Describe Theissen polygon method of calculating average rainfall.	1	K2

4.		Attempt any one part o	f the following:	
0	no		Question	

Q no.	Question	C O	Level
a.	Explain the concept of a Direct Runoff Hydrograph and how it differs from a total hydrograph.	2	K2
b.	How do you estimate consumptive use of crop? Explain in detail.	2	K2

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 $10 \ge 1 = 10$

SECTION A



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5.	Attempt any <i>one</i> part of the following:	10 x	1 = 10
Q no.	Question	СО	Level
a.	Design an irrigation channel based on Kennedy's theory with the	3	K3
	following details		
	Discharge : 60 cumec		
	Bed Slope : 1 in 6000		
	Critical Velocity Ratio m : 1.05		
	Rugosity coefficient : 0.02		
b.	Design an irrigation channel using Lacey's theory for the following data	3	K3
	Discharge : 40 m3 /sec		
	Silt factor : 1.02		
	Side Slope : ¹ / ₂ : 1		

6.	Attempt any one part of the following:	10 x	1 = 10	
Q no.	Question	CO	Level	
a.	How are river training works classified? Explain about any two types of	4	K2	
	river training works in a detailed manner.			
b.	What are the basic principles of regulation of a canal system? Explain	4	K2	\wedge
	the various method of regulation of canal system.)

7.	Attempt any one part of the following:		
Q no.	Question	CO	Level
a.	Derive the expression for the steady state discharge of well fully	5	K3
	penetrating into a unconfined aquifer.	•	
b.	Illustrate the terms (i) cone of depression (ii) specific yield (iii) flowing	5	K3
	well (iv) Darcy's velocity.		
	08-121-2025		