



Course/Branch: B.Tech. Civil Engineering

Semester : VII

Subject Name : Irrigation and Water Resource Engineering

Max. Marks : 100

Subject Code : KCE 078

Time : 180 min

*CO-1 : Describe the components of hydrological cycle, evaporation process and consumptive use computation of run-off.*

*CO-2 : Apply the knowledge of stream flow measurement techniques and hydrograph theory for*

*CO-3 : Design different types of irrigation channels and water logging preventive measures.*

*CO-4 : Design the regulatory and control systems of canal and irrigation outlets.*

*CO-5 : Apply the knowledge of ground water hydrology and determination of discharge through wells*

**Section – A # 20 Marks (Short Answer Type Questions)**

Attempt ALL the questions. Each Question is of 2 marks (10 x 2 = 20 marks)

Q. No.	COx	Question Description #
1	CO1	Define the hydrologic cycle. K1
b	CO1	State the water budget equation. K1
c	CO2	List the factors affecting infiltration. K1
d	CO2	What is base flow separation in hydrograph analysis? K2
e	CO3	Differentiate between suspended load and bed load. K2
f	CO3	State the advantages of canal lining. K2
g	CO4	Define the purpose of canal regulation works. K1
h	CO4	List the methods of river training. K1
i	CO5	Define aquifers and name their types. K1
j	CO5	Explain the term "specific yield" of a well. K2

**Section – B # 30 Marks (Long / Medium Answer Type Questions)**

Attempt ALL the questions. Each Question is of 6 marks (5 x 6 = 30 marks)

Q.2 (CO-1) : Describe the methods of precipitation measurement and analysis. K3

OR

Explain the concept of Intensity-Duration-Frequency (IDF) curves. K3

Q.3 (CO-2) : Explain the process of hydrograph analysis and its components. K4

OR

Derive the Unit Hydrograph from a given set of data. K4

Q.4 (CO-3) : Discuss Kennedy's theory for the design of irrigation channels. K3

OR

Explain the causes and effects of waterlogging. K3

Q.5 (CO-4) : Describe the classification of rivers and methods of river training. K3

OR

Explain the functional aspects of irrigation outlets. K4

Q.6 (CO-5) : Determine the discharge through a confined aquifer under steady flow conditions. K3

OR

Describe the types of tube wells and their suitability. K3

**Section – C # 50 Marks (Medium / Long Answer Type Questions)**

Attempt ALL the questions. Each Question is of 10 marks.

Q.7 (CO-1) : Attempt any TWO question. Each question is of 5 marks.

- (a) Discuss the consistency of rainfall records and methods to fill missing data. K4
- (b) Describe the process of evaporation and the factors affecting it. K3
- (c) Explain the measurement techniques for infiltration. K4

Q.8 (CO-2) : Attempt any TWO question. Each question is of 5 marks.

- (a) Discuss the factors influencing runoff. K3
- (b) Explain the derivation of Synthetic Unit Hydrograph. K4
- (c) Describe the rainfall-runoff relationship. K3

Q.9 (CO-3) : Attempt any TWO question. Each question is of 5 marks.

- (a) Describe the design procedure for lined irrigation channels. K4
- (b) Explain Lacey's theory for channel design. K4
- (c) Discuss the economics of canal lining. K3

Q.10 (CO-4) : Attempt any TWO question. Each question is of 5 marks.

- (a) Explain the different types of irrigation outlets. K3
- (b) Discuss the objectives and stages of river meandering. K4
- (c) Describe the bank protection measures used in river training. K3

Q.11 (CO-5) : Attempt any TWO question. Each question is of 5 marks.

- (a) Explain the determination of aquifer constants. K4
- (b) Describe the efficiency and specific capacity of a well. K3
- (c) Discuss the methods of lifting water from open wells. K3