

**B.TECH. DEGREE EXAMINATION, MAY 2016****Sixth Semester**

Branch : Civil Engineering

WATER RESOURCES ENGINEERING-I (C)

(Old Scheme—Prior to 2010 Admissions)

[Supplementary/Mercy Chance]

Time : Three Hours.

Maximum : 100 Marks

**Part A***Answer all questions.**Each question carries 4 marks.*

1. What is consumptive use ? What are the methods for finding this ?
2. What are the principle criteria for designing suitable irrigation methods ?
3. Explain with neat sketch the concept of hydrological cycle.
4. Explain the term time of concentration.
5. Explain the steps in planning of an irrigation canal system.
6. Draw and explain the typical cross section of a canal.
7. Write a note on infiltration galleries.
8. Explain different types of aquifers.
9. Explain mass inflow curve?
10. Explain about groynes.



(10 × 4 = 40 marks)

**Part B***Answer all questions.**Each full question carries 12 marks.*

11. (a) During a particular stage of a growth of a crop, consumptive use of water is 2.8 mm/day. Determine time intervals in days between irrigation and depth of water to be applied when the water available in the soil is : (i) 25% ; (ii) 50% ; (iii) 75% and (iv) 0% of maximum depth of available water in the root zone which is 80mm. Assume irrigation efficiency to be 65%.  
(8 marks)
- (b) Explain different types of irrigation schemes.  
(4 marks)

Or

Turn over

- (c) Explain Indian scenario of irrigation development. (6 marks)
- (d) What you mean by soil water? What are the different types of soil water ?

(6 marks)

12. (a) The following table lists the ordinates of a run off hydrograph in response to a rain fall of 21.9 mm during the first two hours, 43.9 mm in next two hours and 30.9 mm in last two hours. The basin catchment area is 133.1 km<sup>2</sup>. Obtain : (i) unit hydrograph and its duration (Say T hours) ; (ii) Time of concentration ; and (iii) Derive unit hydrographs for 2T and 3T hours.

Time (hr)	...	0	2	4	6	8	10	12	14	16	18
Discharge (m <sup>3</sup> /s)	...	0	171	393	522	297	133	51	10	10	10

(12 marks)

*Or*

- (b) Explain different methods of precipitation measurement. (6 marks)
- (c) What you mean by hydrographs ? What are the factors affecting shape of a hydrographs ?

(6 marks)

13. (a) Explain Lacey's regime theory. What are the assumptions, advantage and limitations ? Derive an expression for : (i) bed slope, discharge and silt factor ; and (ii) velocity of flow, discharge and silt factor.

*Or*

- (b) Explain Kennedy's silt theory and its limitations. (6 marks)
- (c) What are the different types of canal outlets ? (6 marks)

14. (a) What are the different types of tube wells ? What are the criteria for selection of tube wells and site selection ?

*Or*

- (b) Derive the expression of Dupit's equation.

15. (a) What are the different methods to regulate the sedimentation in reservoirs ? (6 marks)
- (b) Explain about salt intrusion and its reclamation methods. (6 marks)

*Or*

- (c) Explain the steps for finding reservoir capacity and safe yield using mass inflow curve. (6 marks)
- (d) Explain the term flood routing. (6 marks)

[5 × 12 = 60 marks]

