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# 320732(20)

## B. E. (Seventh Semester) Examination, April-May 2021

**(New Scheme)**

**(Civil Engg. Branch)**

## WATER RESOURCES ENGINEERING-I

***Time Allowed : Three hours***

***Maximum Marks : 80***

***Minimum Pass Marks : 28***

***Note :*** *Attempt all questions. Part (a) of each question is compulsory. Attempt any two parts from (b) (c) and (d). Part (a) carry 2 marks & rest of carries 7 marks.*

### Unit-I

**1.** (a) Define Sprinkler irrigation.

(b) Describe the advantages of irrigation.

(c) After how many days will you supply water to soil in order to insure sufficient irrigation of the given crop if :

(i) Field capacity of soil = 28%

(ii) Permanent wilting point = 13%

(iii) Dry density of soil = 1·3 gm/ $cm^3$

(iv) Depth of root zone = 70 cm

(v) Daily consumptive use of water = 12 mm

(d) Define duty and delta and derive the relationship between them.

## Unit-II

**2.** (a) Define Ridge canal.

(b) Describe classification of canal based on the discharge and its relative importance in a given network of canals.

(c) Design an irrigation canal to cary a discharge of 14 cumecs. Assume $n$ = 0.0225, $m$ = 1, B/D = 5.7.





(d) The slope of channel in alluvium is $S$ = 1/5000, Lacey's silt factor = 0.9. Channel side slope = ½ : 1. Find the channel section and maximum discharge which can be allowed to flow in it.

## Unit-III

**3.** (a) Define water logging.

(b) Explain the casues of water logging.

(c) Describe the different types of lining.

(d) Design a trapezoidal shaped concrete lined channel to carry a discharge of 100 $m^3/s$ at a slope of 25 cm/km. The side slopes of the channel are 1·5 : 1. The value of $n$ = 0·016. Assume the limiting velocity as 1·5 m/s.

## Unit-IV

**4.** (a) Define river training.

(b) Describe the different types of Groynes.

(c) (i) Describe objects of river training.

(ii) Describe the classification of river training works.

(d) Explain the following :

(i) Guide bank

(ii) Levees

(iii) Pitched islands

(iv) Channel improvement

## Unit-V

5. (a) Define flood routing.

(b) Describe the different investigations required for reservoir planning.

(c) The following table gives the mean monthly flow in a river during 1981. Calculate the minimum storage required maintaining a demand rate of 40 $m^3/s$. Solve the problem using arithmetic calculation.

| Month | Mean flow ($m^3/s$) |
|---|---|
| Jan | 60 |
| Feb | 45 |
| Mar | 35 |
| Apr | 25 |
| May | 15 |
| June | 22 |





| | |
|---|---|
| July | 50 |
| Aug | 80 |
| Sept | 105 |
| Oct | 90 |
| Nov | 80 |
| Dec | 70 |

(d) Describe the Graphical method of flood routing.