USN | | | | | | | | | | |

10CV846

Eighth Semester B.E. Degree Examination, July/August 2021
Water Resources Engineering

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions.***

1 a. Explain world's fresh water resources distribution and importance of water management in today's world. **(04 Marks)**

b. Explain any three water management sectors. **(06 Marks)**

c. Discuss the various agencies included in water management community. **(10 Marks)**

2 a. Explain the process of precipitation and also discuss its forms. **(10 Marks)**

b. Compute the mean annual precipation for the river basin data given in the table below by :
i) Arithmetic Mean Method ii) Thiessen Polygon method.

Station	A	B	C	D	E	F	G	H	I
Rainfall (cm)	84	81	69	79	63	58	61	69	56
Area enclosed (km^2)	7.88	2.80	8.67	12.57	3.02	5.79	5.22	8.45	8.05

(06 Marks)

c. Write a short note on design storm. **(04 Marks)**

3 a. Define drainage basin and explain any four characteristic of drainage basin that affects runoff. **(10 Marks)**

b. Develop the triangular SCS unit hydrograph for a watershed of area 7.0km^2 and average slope is 3 percent. The hydraulic length is 2000m and CN = 85. **(10 Marks)**

4 a. Explain any three surface irrigation methods. **(06 Marks)**

b. Discuss any two draught management options. **(04 Marks)**

c. The average monthly adjusted run off of a river during a critical year are as follows :

Month	Jan.	Feb.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Runoff (ha-m)	500	350	650	600	300	650	7500	6000	3500	2500	600	700

If there is a uniform demand of 6 cumecs, determine the reservoir capacity. **(10 Marks)**

5 a. Define flood plain with a neat sketch. **(04 Marks)**

b. What are the tangible and intangible benefits from a flood control? **(06 Marks)**

c. Explain any four structural and one non-structural measures adopted for flood control. **(10 Marks)**

6 a. The following data is available regarding various types of area R the corresponding impermeability factors of a town.

S.N	Type	Percent area	Impermeability Coefficient
1	Roofs	15%	0.90
2	Pavements	20%	0.80
3	Lawn	40%	0.15
4	Unpaved	15%	0.20
5	Wooded	10%	0.05

Determine the average coefficient of runoff. If the total area of the district is 20 hectares determine the maximum storm water flow for a rainfall intensity of 50 mm/hr having of frequency of once in five years. Use rational formula. **(05 Marks)**

b. Discuss the effect of urbanization on storm water runoff. **(05 Marks)**

c. Explain the various subsurface practices for stormwater control. **(10 Marks)**

7 a. Explain the design considerations for highway pavement drainage. **(10 Marks)**

b. Why drainage inlets are provided in street Gutters? Explain any three types of drainage inlet with neat sketch. **(10 Marks)**

8 a. Explain the classification of dams based on hydraulic design with sketch. **(10 Marks)**

b. What are the essential requirements of a spillway? Describe the various components of a spillway along with their functions. **(10 Marks)**

* * * * *