Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(Civil Engineering) (2011 Onwards E-I & II) (Sem.–7,8)

FLOOD CONTROL & RIVER ENGINEERING

Subject Code : BTCE-816

M.Code : 71875

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Answer briefly :

a. Explain lateral movement of rivers and its bank instability.

b. Difference between guide bank and spurs.

c. Write short notes on :

i) River bed aggradation

ii) Armouring.

d. What do you understand by resistance to flow?

e. Explain free board.

f. What do you mean by launching apron?

g. Write a note on economic justification of flood control projects.

h. What is the spacing of groynes?

i. What do you mean by bar formation in alluvial rivers?

j. What do you mean by resistance to flow?

SECTION-B

2. The ordinates of a 3 hour unit hydrograph are given below :

Time in hr	0	3	6	9	12	15	18	21	24	27	30
Ordinates m^3/sec	0	10	25	20	16	12	9	7	5	3	0

Find the ordinates of a 6 hour unit hydrograph for the same basin, analytically. Also sketch this unit hydrograph. What is the peak value of discharge in this unit hydrograph?

3. What do you understand by flood forecasting? Why flood forecasts are necessary in life, and how are they formulated?

4. What do you mean by spurs? Explain different types of spurs.

5. What are the uses and limitations of unit hydrograph theory?

6. Enumerate and briefly discuss the various methods that may be employed for controlling floods and also discuss the comparative merits and demerits of these methods.

SECTION-C

7. Using a 3 hr. unit hydrograph given below find the peak flow, resulting from four successive 3 hour periods of rainfall producing 0.38, 0.89, 1.42 and 0.75 cm of runoff respectively by from a basin.

Time in hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Flow in m^3/s	0	15	56	169	332	435	395	280	210	161	120	90	59	32	15	0

8. What are the impacts of flooding on socio economic development and agriculture?

9. Estimate the sediment load in tonne at the proposed dam site in North India with the following data using various empirical equations :

Catchment area = 1839 sq. km

Width of reservoir at FRL = 560.0 m

River slope at the dam site = 0.006

Assume annual siltation rate per 100 sq. km from a similar catchment of 3050 sq. km to be 10.35 $M.m^3$/100 sq.m.

Average inflows at the site are as follows :

Year	1982	1983	1984	1985	1986	1987	1988	1989	1990
Inflow M. m^3	2210	1290	1640	1780	2150	1980	2540	1285	1620

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.