Time: 3 Hours **Max. Marks. 80**

Note: -

1. Question 1 is compulsory and Solve any 3 question out of remaining Questions
2. Assume suitable data wherever necessary and state the assumptions made.
3. Diagrams / sketches should be given wherever necessary.
4. Use of logarithmic table, drawing instruments and non programmable calculators is permitted.
5. Figures to the right indicate full marks.

Q. 1 Solve **any five** **20**

A. Define hydrology

B. State methods to estimate evaporation

C. What are factors affecting selection of site for reservoir

D. Explain methods of control of sedimentation

E. Write a procedure for computation of direct runoff from storm hydrograph

F. Define irrigation and discuss in brief its benefits

G. What are the factors affecting duty

Q.2 A. A hourly ordinates of 2 hour unit hydrograph are given below. Derive a 6 hour unit hydrograph for the same catchment **10**

Hours	0	1	2	3	4	5	6	7
Ordinates of unit hydrograph(cumecs)	0	1.0	2.7	5.0	8.0	9.8	9.0	7.5
Hours	8	9	10	11	12	13	14	15
Ordinates of unit hydrograph(cumecs)	6.3	5.0	4.0	2.9	2.1	1.3	0.5	0

B. Derive equilibrium equation for discharge in unconfined aquifer **5**

C. Explain zones of storage reservoirs in reservoir planning **5**

Q3	A.	A 36 cm well penetrates 24 m below the static water table. After 24 hours of pumping @ 5.4 cubic meter/minute, the water level in test well at 90 mis lowered by 0.53m, and in well 30 m away the drawdown is 1.11 m, what is transmissibility of the aquifer	**10**
	B.	State and explain the factors affecting runoff	**10**
Q4	A.	Discuss in brief various methods of sub surface irrigation.	**10**
	B.	derive the relationship between duty delta and base period	**5**
	C.	Write a note on hydrologic cycle with neat sketch	**5**
Q5	A.	Write a note on command area development.	**5**
	B.	Explain the term complex hydrograph.	**5**
	C.	A Channel is to be designed for Irrigating 5000 ha in kharif crop and 4000 ha in Rabi crop. The water requirement for kharif and rabi are 60 cm and 25 cm respectively. The crop period for kharif crop is 21 days and for rabi crops 28 days. Determine the discharge of the channel for which it is to be designed.	**10**
Q6		Explain the followings terms	**20**
	A.	Quality of irrigation water	
	B.	Critical levels of water in soil	
	C.	Percolation tanks	
	D.	Selection of site for reservoir	

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