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Code No: CE1514

GEC-R14

II B. Tech II Semester Supplementary Examinations, January 2017

WATER RESOURCES ENGINEERING-I

(Civil Engineering)

Time: 3 Hours

Max. Marks: 60

Note: All Questions from **PART-A** are to be answered at one place.

Answer any **FOUR** questions from **PART-B**. All Questions carry equal Marks.

PART-A

6 × 2 = 12M

1. Explain the defects in Thiessen's polygon method of computing average rainfall over an area.
2. What are the factors affecting infiltration?
3. Explain Khosla's formula for computing run off over a catchment.
4. What are the methods available for determining peak flood discharges?
5. Explain various types of tube wells.
6. How do you assess requirement of irrigation water?

PART-B

4 × 12 = 48M

1. a) How do you determine maximum and minimum rainfall within specified time? (6M)
- b) What are the losses or abstractions from precipitation ? (6M)
2. a) Explain estimation of evapotranspiration by Blaney-Criddle method. (6M)
- b) An ayacut of 10,000 hectares has to be irrigated from a distributary, 70% in Kharif and 30% in Rabi. The average duty at head of distributary is 1000 hectares/cumec in Kharif and 2,500 hectares/cumec in Rabi. Determine total discharge required at the head of the distributary. (6M)
3. a) Explain the procedure for constructing a unit hydrograph from a flood hydrograph. (6M)
- b) Ordinates of 4-h unit hydrograph are given. Using this derive the ordinates of 2-h unit hydrograph for the same catchment. (6M)

Time (h)	0	4	8	12	16	20	24	28	32	36	40	44
Ordinate of 4-h UH (m ³ /s)	0	20	80	130	150	130	90	52	27	15	5	0

4. a) Explain components of single peak hydrograph. (6M)
b) Flood frequency computations for a flash river are given below.

Return period (T) in years	50	100
Peak flood (m^3/sec)	20,600	25,150

Estimate flood magnitude in the river with a returning period of 300 years through use of Gumbell's method. Assume sample size to be very large. (6M)

5. a) Derive an expression for discharge from a well fully penetrating a confined aquifer. (6M)
b) Design a tube well with the following data.

Yield required = 0.35 cumecs

Thickness of confined aquifer = 30m

Radius of influence = 300m

Permeability coefficient = 90m/day

Draw down = 5.50m (6M)

6. a) Explain various types of irrigation methods bringing out advantages and disadvantages. (6M)
b) Explain sprinkler irrigation and drip irrigation methods bringing out suitable cropping pattern. (6M)
