

(3 Hours)

Total marks: 80

1. Q.1 is COMPULSORY
2. Attempt any THREE out of remaining questions
3. Assume suitable data wherever required.

Q.1 Attempt any FOUR of the following (20)

- A. Write a short note on irrigation, its benefits and drawbacks.
- B. Describe in brief about ring basin method.
- C. Write a short note on various methods of calculating missing rainfall.
- D. Define the following: aquifer, aquifuge, aquiclude, drawdown, cone of depression
- E. Describe the various components of hydrograph and hyetographs with neat diagrams.

Q.2. A.i. Explain any one of the automatic rain gauges with the help of a diagram (05)

A.ii. Define Precipitation. Explain in detail any one type of precipitation (05)

B. The ordinates of 8-h unit hydrograph for a drainage basin are given below. Obtain 24- hr UH by S-curve method. (10)

Time (hours)	0	4	8	12	16	20	24	28	32	36	40
Ordinates of 8-h UH	0	5.5	13.5	26.5	45	82	162	240	231	165	112

Q.3. A i. Explain in detail the various zones of storage in a reservoir, also draw a neat diagram for the same. (05)

A ii. Define spillways and their types (05)

B. Describe in detail the various modes of failure of a gravity dam (10)

Q.4. A. i. Write a short note on Well Interference. (05)

A.ii. Describe in brief about the canal escapes (05)

Q4.B. A gravity well has a diameter of 60cm. The depth of water in the well is 40m before the pumping started. When pumping is being done at the rate of 2000 lpm, the drawdown in a well 10m away is 4m and in another well 20m away is 2m. Determine (a) Radius of zero drawdown, (b) co-efficient of permeability, (c) drawdown in the well. (10)

Q5. A.i. Differentiate between elementary & practical profile of gravity dam (05)

A.ii. What are the various forces acting on a gravity dam? (05)

B. Design the practical profile of a gravity dam from the following data:

Reduced Level of base of Dam is 1600m

Reduced Level of F. R. L. = 1625m,

Specific Gravity of masonry = 2.5.

Safe compressive stress for masonry = 1500 kPa.

Height of waves = 1m.

Assume any suitable data if required and state the same clearly. (10)

Q.6. A. Design an irrigation channel to carry a discharge of 14 cumecs. Take $N=0.0225$ and critical velocity ratio as 1.05. Assume $B/D = 5.7$. Assume any suitable data, if required and state the same clearly. (10)

B. Describe with the help of sketches various types of Cross Drainage Work. (10)
