BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: B.TECH **SEMESTER : VI**
BRANCH: CIVIL **SESSION : SP/2025**

SUBJECT: CE302 WATER RESOURCES ENGINEERING

TIME: 3 Hours **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q.1(a)	Draw the hydrologic cycle showing all its components.	[5]	1	2
Q.1(b)	Estimate the constant rate of withdrawal from a 1000 ha reservoir in 10 days during which the reservoir level drops by 0.20 m despite of avg. Inflow of 0.2 Mcm/day. During the period, monthly seepage loss is 2.4 cm, precipitation over the reservoir is 9.3 cm and evaporation is 12 cm.	[5]	1	4
Q.2(a)	Describe a method to measure discharge in a wide river.	[5]	2	3
Q.2(b)	Four raingauge stations are installed at the corners of a rectangular plot measuring 2000m by 3000m. If the annual rainfalls at the corners are 100mm, 70mm, 110mm and 65mm, estimate the average rainfall by the Thiessen polygon method.	[5]	2	5
Q.3(a)	Define unit hydrograph? Explain assumptions of the unit hydrograph theory.	[5]	3	2
Q.3(b)	A 100 mm dia well fully penetrating confined aquifer of 20m depth. For pumpage of 30 litre/s, the steady draw-downs at 80 m and 200 m distances from the well are observed as 2.5 m and 1.5 m respectively. Estimate the coefficient of permeability and transmissibility.	[5]	3	5
Q.4(a)	Define GCA, CCA, Intensity of Irrigation, permanent wilting point and field capacity	[5]	4	4
Q.4(b)	A tube well discharging 100 m^3/hr of water, works for 3000 hr in a year to mature crops in a command. Estimate CCA if intensity of irrigation is 55% and average water depth required for Rabi and Kharif crop is 46 cm.	[5]	4	4
Q.5(a)	Discuss the ways to control sedimentation in reservoirs?	[3]	5	3
Q.5(b)	Design an elementary profile of a concrete gravity dam to store 30 m of water and check its stability.	[7]	5	6

::::::29/04/2025::::::M