VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (Civil Engg. : CBCS) VI-Semester Main Examinations, January-2021

Hydrology & Water Resources Engineering

Time: **2** hours

Max. Marks: **60**

*Note: Answer any **NINE** questions from **Part-A** and any **THREE** from **Part-B***

Part-A *(9× 2 = 18 Marks)*

Q. No.	Stem of the question	M	L	CO	PO
1.	What is the significance of infiltration index?	2	1	1	1
2.	What are the processes involved in Hydrological cycle?	2	1	1	1
3.	What is steady state groundwater table?	2	1	2	1
4.	Define storage coefficient for confined aquifer.	2	1	2	1
5.	Define safe yield and firm yield of a reservoir	2	1	3	1
6.	Define trap efficiency	2	1	3	1
7.	What is sliding in gravity dams and how it will be checked?	2	2	4	2
8.	What is a middle third rule and state condition for no tension at the base?	2	2	4	2
9.	Recall the differences between storage and runoff river plants	2	1	5	2
10.	Why surge tanks are provided?	2	2	5	2
11.	What are the possible sources of error in the measurement of rainfall?	2	2	1	1
12.	Distinguish between aquitard and aquiclude	2	4	2	1

Part-B *(3 × 14 = 42 Marks)*

13. a)	What are the different methods used to separate base flows from a hydrograph? Explain any one method.	7	2	1	2
b)	The rate of rainfall for successive 30 min period of 210 min storm are 4.5,5,13,9.5,5.5,5.5 and 4 cm/hr. Assuming ϕ index of 4.5 cm/hr, Determine the effective rainfall over the basin in cm, the total rainfall and value of w-index.	7	5	1	2
14. a)	Define confined and unconfined aquifer with a neat sketch?	7	1	2	1
b)	In an artesian aquifer of 8 m thick, a 10 cm dia well is pumped at a constant rate of 100 lit / minute. The steady state drawdown observed in two wells located at 10 m and 50 m distance from the center of well are 3 m and 0.05 m respectively. Determine the transmissivity and hydraulic conductivity of the aquifer.	7	5	2	2

			M	L	CO	PO
15.	a)	How do you estimate life span of a reservoir? Explain.	7	2	3	1
	b)	Explain various zones of storage in reservoirs, with the help of neat sketch.	7	2	3	1
16.	a)	Derive and conclude the equation for limiting height of a gravity dam.	7	4	4	2
	b)	List and Explain different types of dams. Mention their advantages and disadvantages.	7	4	4	3
17.	a)	Explain with neat sketches components of a power house.	7	2	5	1
	b)	List and explain how Hydroelectric power plants classified.	7	4	5	2
18.	a)	List and Explain the factors affecting Runoff.	7	4	1	1
	b)	Explain constant level pumping test.	7	2	2	2
19.		Answer any *two* of the following:				
	a)	List the factors to be considered while selecting the site for a reservoir.	7	4	3	2
	b)	List and explain various forces acting on gravity dam.	7	2	4	1
	c)	Distinguish between Penstock and Surge tank.	7	2	5	1

M: Marks;   L: Bloom's Taxonomy Level;   CO: Course Outcome;   PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	60
2	Knowledge on application and analysis (Level-3 & 4)	30
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	10

*****