BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID-SEMESTER EXAMINATION SP/2025)

CLASS: B.ARCH. **SEMESTER : IV**
BRANCH: ARCHITECTURE **SESSION : SP/2025**

SUBJECT: AR251 BUILDING SERVICES – I (WATER SUPPLY & SANITATION)
TIME: 02 Hours **FULL MARKS: 25**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Tables/Data handbook/Graph paper, etc., if applicable, will be supplied to the candidates**

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Q.1(a)	With the help of a flow diagram, briefly explain the raw water treatment process.	[2]	2	Remember
Q.1(b)	Briefly explain the steps for water supply in buildings. (In each step, list down the ways/methods and describe any one process for each step)	[3]	1 & 2	Understand
Q.2(a)	Discuss the steps of Municipal Solid Waste Management.	[2]	3	Remember
Q.2(b)	Sketch and explain the following: i) Garbage Chute in High-Rise Buildings ii) Vermi-Composting iii) Sanitary Landfilling	[3]	3	Understand
Q.3(a)	Explain the significance of floor traps in plumbing systems. Sketch different types of traps based on shapes.	[2]	3	Analyze
Q.3(b)	With the help of a section of a washroom (WC+Bath), present the water supply lines and drainage lines to and from different fixtures.	[3]	3	Apply
Q.4(a)	Sketch and explain: i) Sluice Valve, ii) Manhole	[2]	3	Remember
Q.4(b)	Draw and explain different types of plumbing/pipe systems.	[3]	3	Understand
Q.5(a)	An overhead water tank needs to be designed for 20 families (the average family size is five) living in an apartment building in New Delhi. Calculate the capacity of the water tank required in cubic meters. Assuming that each water tank will be of 5 cubic meter capacity, how many such water tanks will be required?	[2]	1	Apply
Q.5(b)	A landscape garden with an irregular profile and minor undulations, measuring 35,000 sq.m., has a total surface area covered with 20% brick paving, 15% cement concrete paving, and the rest with grass. The peak intensity of rainfall in that region is 70mm/hr. The runoff coefficient for brick paving, cement concrete paving, and grass is 0.8, 0.9, and 0.5, respectively. Calculate the estimated quantity of run-off in cubic meters/hr, for the entire garden area.	[3]	1	Apply

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