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The Assam Royal Global University, Guwahati

Royal School of Engineering and Technology
M. Tech. (Civil Engineering, WRDM) 2nd Semester

Semester End Examination, June 2023

Course Title: Urban Water Resources Management

Course Code: CEE024C20W3

Time: 3 Hours

Maximum Marks: 70

Note: Attempt all questions as per instructions given.
The figures in the right-hand margin indicate marks.

Section – A

1. Attempt all questions. (Maximum word limit 50) 2 x 8=16
- a. What is urbanization?
 - b. What is an impervious layer?
 - c. What is frequency analysis?
 - d. Define swale and curb.
 - e. What are the solids buildup and wash-off process of urban drainage?
 - f. What is the main advantage of sand filters?
 - g. What is rainwater harvesting?
 - h. What are the desirable features of an urban stormwater computational model?

Section – B

2. Attempt any two of the following: 6 x 2=12
- a. Distinguish between urban, peri-urban and rural areas.
 - b. State the objectives of the urban drainage system.
 - c. What are the adverse consequences of urban drainage system?
3. Attempt any two of the following: 7 x 2=14
- a. A highway culvert is designed to convey a 25-year storm. Determine the hydrologic risk of this design if the expected service life of the culvert is 30 years. What return period be used as a basis for design if the allowed hydrologic risk is 10%?
 - b. Describe the various components of sewer appurtenance with suitable diagram.
 - c. What are the general considerations for designing roadway drainage system?
4. Attempt any two of the following: 7 x 2=14
- a. Write a short note on urban stormwater pollutants.
 - b. What is dewatering? Describe briefly about the various dewatering methods.
 - c. Explain the scenarios where chemical treatment of stormwater is needed.
5. Attempt any two of the following: 7 x 2=14
- a. Describe the most prolonged practices involved in the structural BMP.
 - b. Explain elaborately the various types of water conservation.
 - c. Write a short note on various approaches to maintaining urban drainage systems.