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MIO-005

**DIPLOMA IN SMART CITY
DEVELOPMENT AND MANAGEMENT
(DSCDM)**

Term-End Examination

June, 2022

**MIO-005 : SMART CITIES : SAFE WATER,
SANITATION AND SUSTAINABILITY**

Time : 3 Hours

Maximum Marks : 70

Note : (i) *Attempt any **seven** questions.*

(ii) *All questions carry equal marks.*

1. (a) What are the uses of implementing smart water solutions ? 5
- (b) What is SCADA System ? What are its uses in water management ? 5
2. (a) Write the purpose of screening in water treatment. Discuss different types of screens used. 5

P. T. O.

- (b) What is settling velocity ? Discuss the types of settling in sedimentation tank. 5
3. Differentiate between the following : $2\frac{1}{2}\times 4=10$
- (a) Sullage and Sewage
 - (b) Sewage and Sewerage
 - (c) Raw sewage and Septic sewage
 - (d) Storm water and Sub-soil water
4. Discuss in detail any *four* patterns of sewage collection system. 10
5. Explain the components that determine the physical and chemical characteristics of solid waste. 10
6. (a) Explain the different sources of municipal solid generation. 5
- (b) Discuss the factors affecting the rate of municipal solid waste generation. 5
7. (a) What are the six M's in improving the solid waste management in the developing countries ? 5
- (b) Discuss different types of solid waste collection system. 5

8. (a) Explain the steps involved in anaerobic digestion. 5
- (b) How is Refuse Derived Fuel (RDF) generated ? Write the primary functions of RDF system. 5
9. (a) How can sustainable development be implemented in Integrated Solid Waste Management (ISWM) ? 5
- (b) Write a note on circular economy in waste management. 5
10. (a) Discuss in brief different biological conversion technologies in waste management. 5
- (b) Explain operational principles involved in landfills. 5