

394833

394853(94)

B. E. (Eighth Semester) Examination, April-May 2021

WATER RESOURCES ENGINEERING

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Attempt all questions. Part (a) of each question is compulsory and attempt any two parts from (b), (c) and (d).

Unit-I

1. (a) What are the needs for irrigation? 2
- (b) Explain the terms : 7
- (i) flow irrigation
- (ii) lift irrigation

394853(94)

394833

PTO

[2]

- (iii) inundation irrigation
- (iv) perennial irrigation 7
- (c) What are the factors affecting duty of water? 7
- (d) The root zone of a certain soil has a field capacity of 30% and permanent wilting percentage is 10% : 7
- (i) What is the depth of moisture in the root zone at field capacity and permanent wilting point?
- (ii) How much water is available if the root zone depth is 1.2 m. The dry weight of the soil is 13.73 kN/m^3 .

Unit-II

2. (a) What are inundation canals? 2
- (b) Discuss in detail various causes of losses of water in channels. 7
- (c) Sketch a typical cross section of a canal which is partly in cutting and partly in filling. 7
- (d) A canal has a bed width of 8 m, full supply depth 2.5 m, bank width 3 m, cutting slope 1 : 1, filling slope 1.5 : 1 and free board 0.5 m. Calculate balancing depth. 7

394853(94)

394833

[3]

Unit-III

3. (a) What are the causes of waterlogging? 2
- (b) Explain the method of design of a lined canal. 7
- (c) What are modular, non-modular and semi-modular outlets? 7
- (d) Design a trapezoidal shaped concrete lined channel to carry a discharge of 200 cumec at a slope of 30 cm/km. the side slopes of the channel are 1.5 : 1. The value of N may be taken as 0.017. Assume limiting velocity in channel as 2 m/s. 7

Unit-IV

4. (a) Explain Design flood. 2
- (b) Describe the use of levees as flood control measure. 7
- (c) Explain the types of rivers. 7
- (d) What are cutoffs and pitched islands? 7

Unit-V

5. (a) How are reservoirs classified? 2
- (b) Define the the terms trap efficiency and density currents. 7

394853(94)

394833

PTO

- (c) Describe the various measures taken to reduce loss of water due to evaporation in reservoirs. 7
- (d) What is flood routing? Explain in detail any one method of flood routing. 7