

Roll No.....

Total No. of Printed Pages: 1

Total No. of Questions: [09]

B. Tech. (Civil Engg.) Sem: 7th
WATER RECOURSES ENGINEERING
Subject Code: BCIED1751
Paper ID: [19110737]

Time: 03 Hours

Maximum Marks: 60

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A

(2 marks each)

Q1. Attempt the following:

- a. List various type of headworks.
- b. What are the various components of diversion headworks?
- c. What are equipotential lines?
- d. When is exit gradient said to be critical?
- e. List different types of weirs.
- f. What are spillways and where are they provided?
- g. What is meant by canal regulation?
- h. Under what conditions of drainage and canal crossings are syphons provided?
- i. What is meant by canal drop?
- j. What is a super passage structure?

Section – B

(5 marks each)

- Q2. Differentiate between silt extractor and silt excluder. Discuss the principles involved in designing the different components of a silt extractor.
- Q3. Discuss main causes of failures of weirs founded on pervious foundations.
- Q4. Describe the necessity and functioning of cross regulator. Also discuss the procedure that will be adopted for designing this regulation work.
- Q5. Discuss with neat sketches different types of aqueducts which can be constructed depending upon the size of the drainage to be passed below the canal. Also discuss factors governing choice of these types of aqueducts.
- Q6. State the requirements of an ideal outlet. On what circumstances a type of outlet is selected?

Section – C

(10 marks each)

- Q7. Briefly explain the salient features of Khosla's theory and how is it used in the design of permeable foundations? How does Lanes theory differ from Bligh's creep theory?
- Q8. Enumerate the important type of spillway gates along with advantages and disadvantages of each.
- Q9. Design 1m Sarda type fall on a channel carrying 20 cumecs discharge, whose bed width and water depth are 14 m and 1.9m respectively.