Roll No. .....

24379

B. Tech. 6th Semester (Civil) Examination – May, 2019

IRRIGATION ENGINEERING-I

Paper : CE-304-F

Time : Three Hours] *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Question No. 1 is ***compulsory***. Attempt ***five*** questions in all, selecting ***one*** question from each Section. All questions carry equal marks.

1. (a) What do you mean by the scouring sluices to maintain a deep channel and what are their considerations ? 4 × 5 = 20

(b) Define exit gradient. Give its expression.

(c) Explain different devices to control entry of silt.

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(d) Classify different types of energy dissipaters.

(e) What is irrigation engineering ? What are its objectives ?

SECTION – A

2. Explain the design of different components of Sarda type fall. Also, Design a Sarda type fall of 2.75 m on a channel carrying 25 cumecs having bed width of 20 m and water depth of 1.48m. 20

3. (a) With the help of neat sketches, define canal escape and explain different types of canal escapes. 10

(b) Define cistern element. Explain the design of cistern element in detail. 10

SECTION – B

4. (a) Sketch the general layout of headworks. List all the components of headworks and explain their functions. 10

(b) State the fundamental difference between Khosla's theory and Bligh's creep theory for seepage flow below a weir. 10

5. During the construction of a canal, which types of cross drainage works shall possibly come across, explain with diagram. Briefly state the site conditions under which each one is used. 20

SECTION – C

6. Discuss earthen dam and Explain how the following parameters effect design of an earthen dam : 20

(i) optimum moisture content

(ii) permeability of soil

(iii) sudden drawdown of reservoir

(iv) C, cohesion

(v) angle of shearing resistance

7. (a) What are arch dams ? Illustrate with examples and mention site conditions favorable for construction of such dams. 10

(b) What do you understand by stability analysis of a gravity dam ? Discuss two methods generally used. 10

SECTION – D

8. (a) Define chute spillway. Discuss the design principles involved in the chute spillway. Why is it preferred to ogee and other types of spillways ? 10

(b) Discuss energy dissipation below spillways. Classify them and what are the conditions considered during selection of energy dissipaters. 10

9. Define stilling basins. 20

Calculate discharge over a spillway, crest length 100 m, wherein water flow depth changes from 1 m to 4 m in hydraulic jump formation in stilling basin.
