24514

B. Tech. 7th Semester (Civil Engineering)

Examination – May, 2015

IRRIGATION ENGG.-II

Paper : CE-407-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 *one* question from each Section. All questions carry equal marks. Assume missing data, if any, suitably.

1. (i) Exit gradient and its importance

　(ii) What are cut-offs and how are they artificially induced.

　(iii) What is meant by flood routing through reservoirs ?

　(iv) Differentiate between super passage and siphon aqueduct.

　(v) What is meant by straight glacis fall.

　(vi) Economic height of dam.

　(vii) Spillway buckets and stilling basins.

　(viii) What do you mean by ogee spillway?

　(ix) Seepage line and its importance in dam.

　(x) Causes of failure of earthen dam.　　$10 \times 2 = 20$

SECTION – A

2. Design a guide bank required for a bridge on a river for the following data :　　20

　Design flood discharge = 50000 cumecs

　Silt factor = 1.10

　Bed level of river = 130 m

　High flood level = 140 m

3. What is hydraulic design of a weir ? Explain the design for different components of a weir.　　20

SECTION – B

4. (a) Describe step by step procedure that adopt for flood routing computations required for reservoirs. http://www.HaryanaPapers.com　10

　(b) What do you mean by flood routing ? Explain the methods used for computing flood routing in detail.　　10

5. Design a siphon aqueduct for the following data :　20

　(a) Discharge of the canal: 25 cumecs.

　(b) Bad width of the canal: 20m.

　(c) Depth of water in the canal: 1.5m.

　(d) Bed level of the canal: 160.00m.

(e) High flood discharge of the drainage: 400 cumecs.

(f) High flood level of the drainage: 160.50m.

(g) Bed level of the drainage: 158.00m.

(h) General ground level: 160.00m.

SECTION – C

6. Design a 2.0 m Sarda type fall for a canal with the following data :

   (i) Upstream bed level = 105 m

   (ii) Side slopes of channel = 1: 1 m

   (iii) Downstream bed level = 101 m

   (iv) Full supply level (upstream) = 107 m

   (v) Bed width (u/s and d/s) = 1.2 m

   The canal having a discharge of 20 cumecs. Assume soil is good loam and Bligh's coefficient as 6.   20

7. A homogeneous earthen dam has the following data :

                                                                 20

   Coeff. Of permeability of material = 4×10^{-4} cm/sec

   Top level of dam = 250 m

   H.F.L. of reservoir = 198 m

   Top width of dam = 4 m

   Upstream slope = 3: 1.5

   Downstream slope = 2: 1

Determine the phreatic line for the dam section and the discharge passing through the dam if the level of river bed is 174 m.

SECTION – D

8. What do you mean by spillway ? Describe the design principles that are involved in the design of an ogee spillway.   20

9. Design a syphon aqueduct with the following data : 20

   For canal

   Discharge = 56 cumecs

   Bed width = 32 m

   F.S. depth = 1.98 m

   R.L. of bed = 267.00 m

   For drainage

   High flood discharge = 425 cumecs

   HFL = 268.20 m

   General bed level = 265.50 m

   General ground level = 267.20 m