(b) What is uplift pressure ? What are the various methods adopted to reduce the uplift pressure. 5

Unit-IV

8. Design a suitable profile of suitable spillways with the following data :

Spillway crest level = 200 m

Level of the bottom of the tank = 192 m

Design discharge = 5,000 me/s

Downstream tail water level corresponding to 5,000 m^3/s = 103.0 m

The spillway length consists of 5 span of 10 m clear width each, the thickness may be assumed at 4 m. 20

9. (a) What do you meant by an 'Energy dissipater' ? Discuss various methods used for energy dissipater below spillways. 10

(b) What is meant by priming ? Discuss the priming arrangement used in Saddle Siphoned Spillways. 10

B.Tech 6th Semester (Civil) F-Scheme Examination, May–2017

IRRIGATION ENGINEERING-I

Paper-CE-304-F

Time allowed : 3 hours] *[Maximum marks : 100*

Note : *Attempt any **five** questions, all questions **carry** equal marks. **Question No. 1 is compulsory. Apart** from that select at least **one** question from each unit.*

1. Write short note on : 20

(a) Canal Lining

(b) Type of canal escape and their suitability

(c) Silt excluder

(d) Grout curtain

(e) Siphons Aquaduct

Unit-I

2. Sketch a siphoned well drop o carry 0.3 m^3/s of water from the following data : 20

Ground level=30 m

B.L. of Channel above Drop= 28 meter

FSL of Channel above Drop=30 m

FSL of channel below Drop=28.50 m

BL of Channel below drop=26.50 m

Provide a 4 meter cart track over the well drop. The earthwork connection should be clearly shown. Assume any data if required.

3. (a) Describe the necessity and functioning of a 'distributary head regulator' and a 'cross regulator' in a canal project. Also discuss the procedure that you will adopt for designing these regulation work. 15

(b) What are 'modules' and requirement of a good module. 5

Unit-II

4. Design a suitable cross drainage work, given the following data. 20

Irrigation canal :

(a) Full Supply discharge = 350 m^3/s

(b) Full supply level = 202.5 m

(c) Canal bed level = 197.8 m

(d) Canal bed width = 35 m

(e) Full supply depth = 4.7 m

(f) Side slope = ½ H : 1 V

Natural Drain :

(i) Drainage bed level = 203.9 m

(ii) Hogh flood level = 2052 m

(iii) Catchment area of drainage up to crossing = 14.3 km^2

5. (a) How does Khosla's theory differ from Bligh's theory with regard to the design of weir on permeable foundation. 5

(b) Draw a neat layout of diversion head works and indicate the various components of the system. Briefly indicate the function of each components. 15

Unit-III

6. A concrete dam can be assumed to trapezoidal in section having a top width of 2 meter and bottom width of 12 meter. It's height is 12 meter and upstream face has a batter of 1:10. Give an analysis of the stability of the dam for the base section for overturning and sliding in full reservoir condition assuming no free board allowance but allowing for uplift pressure. Assuming uplift pressure intensity factor is 100 %. Also determine compressive stresses at toe and heel. Also determine major and minor principal stresses and shear stresses developed. Take unit weight of concrete to be 24 kN/m^3, unit shear strength of concrete is 1400 kN/m^3, and coefficient of friction between concrete and foundation is 0.7. 20

7. (a) Discuss various types of galleries in dam. Also discuss the functions of these galleries. 15