G 621 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2014

Seventh Semester

Branch : Civil Engineering

WATER RESOURCES ENGINEERING II (C)

(Old Scheme – Prior to 2010 Admissions)

[Supplementary]

Time : Three Hours Maximum : 100 Marks

Answer shall be illustrated with sketches wherever necessary.

Part A

Answer **all** *questions.*

Each question carries 4 *marks.*

1. Explain briefly with neat sketches the different forces that may act on a gravity dam.
2. Differentiate between a High and Low dam.
3. Derive the expression for the thickness of an arch dam using thin cylinder theory.
4. Define and explain the term "Pheratic line" in earthern dams.
5. How does Lanes theory differ from Bligh's creep theory.
6. Why crest shutters are use in weirs?
7. Explain the method of designing transitions of an aqueduct.
8. Discuss the factors affecting the selection of a suitable cross drainage work.
9. Differentiate between run-off river plants and storage plants.
10. Write technical notes on Capacity factor and Utilisation factor.

(10 × 4 = 40 marks)

Part B

Answer **all** *questions.*

Each question carries 12 *marks.*

11. (a) What is a spill way? What are its functions? List various types of spill ways.

    (b) Briefly explain "Galleries" mentioning about their need in gravity dams.

(6 + 6 = 12 marks)

Or

Turn over

12. (a) Discuss in detail the effect of providing a top width and a free board to get a practical profile of a gravity dam from the elementary profile.

(b) Discuss the factors affecting selection of a site for a dam.

(8 + 4 = 12 marks)

13. A masonry dam 10 m high in trapezoidal section with 1 m top width and 8 m base width. The up stream face is provided with 1 : 8 batter. Test the stability of the dam. Unit weight of masonry is given as 22.4 kN/m^3. Permissible shear stress = 140 N/cm^2. Calculate the stresses of Toe and Heel of the dam.

(12 marks)

Or

14. (a) What is meant by "the best central angel of an arch dam" and what is its value?

(b) Explain with a neat sketch, the essential components of a rock fill dam, indicating their function.

(8 + 4 = 12 marks)

15. Explain in detail the step by step procedure for designing a vertical drop weir, mentioning the data to be collected before starting the design.

(12 marks)

Or

16. Briefly explain "Khosla's theory of independent variables" and how it is used in the design of weir on permeable foundation. Mention the various corrections to be used.

(12 marks)

17. Describe the design criteria for the following in case of a cross/head regulator :
(a) Crest level ; (b) Crest width ; (c) Total floor length.

12 marks)

Or

18. Describe in detail the design procedure of an Aqueduct.

12 marks)

19. (a) Write a note on the selection of a suitable type of a turbine for a hydro electric scheme.

(b) Draw a sketch to show a general layout for a high head hydel scheme.

(6 + 6 = 12 marks)

Or

20. Write short notes on : (i) Load factor ; (ii) Pondage ; (iii) Storage ; (iv) For bag ; (v) Firm power ; (vi) Intake structures.

(6 × 2 = 12 marks)

[5 × 12 = 60 marks]