

F 3433

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2014

Seventh Semester

Branch : Civil Engineering

WATER RESOURCES ENGINEERING—II (C)

(Old Scheme—Prior to 2010 Admissions)

[Supplementary/Mercy Chance]



Time : Three Hours

Maximum : 100 Marks

*Answer shall be illustrated with sketches wherever necessary.
Assume any missing data suitably.
KHOSLA's chart are permitted.*

Part A

*Answer all questions.
Each question carries 4 marks.*

1. What are the main points to be considered while selecting a site for a gravity dam construction ?
2. "Spillway is the safety valve or a gravity dam". Justify.
3. What is the difference between a homogeneous section and zoned section in earth dam ?
4. Derive the expression for the thickness of an arch dam using thin cylinder theory.
5. Explain briefly with a neat sketch the various component parts of a diversion head work.
6. Briefly explain the limitations of Blight's theory.
7. What are the Functions of falls on main canal ?
8. What is cross drainage work and what is the their importance in a canal project ?
9. Different between run-off river plants and storage plants.
10. Classify the hydel schemes according to available head.

(10 × 4 = 40 marks)

Part B

*Answer all questions.
Each full question carries 12 marks.*

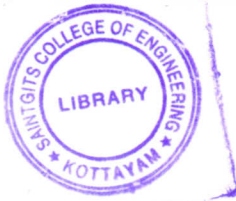
11. (a) What do you understand by galleries and shafts and why are they provided in gravity dams ?
(b) Explain briefly with neat sketches the different forces that may act on a gravity dam.

(6 + 6 = 12 marks)

Or

12. What is a low dam and high dam ? Obtain the relationship between the limiting height of a low profile dam and the limit stress at the found action.

Turn over



13. (a) Prove that the most economical central angle for a constant radius arch dam is $133^{\circ}34'$.
(b) What is a buttress dam? Describe the functions of its component parts. (6 + 6 = 12 marks)

Or

14. (a) Derive the equation for phreatic surface for an earth dam.
(b) What is meant by sluicing and why is it necessary in a rock fill dam. (6 + 6 = 12 marks)

15. (a) Explain the procedure for the design of a vertical drop weir.
(b) Discuss in brief various causes of failure of weirs and their remedies. (7 + 5 = 12 marks)

Or

16. (a) Discuss the relative merits and demerits of Bligh's theory, Lane's weighted creep theory and Khosla's theory in the design of weirs and Khosla's theory in the design of weirs on Permeable Foundations.
(b) Describe, with the help of sketches the working of a silt excluder. (8 + 4 = 12 marks)

17. (a) Explain the various methods by which the vent way of a cross regulator is fixed. Which method gives an economical vent way?
(b) Discuss briefly the difference between a Sarda Type of fall and Notch type of fall. (8 + 4 = 12 marks)

Or

18. Design a cross drainage work to suit the following hydraulic data :—
Canal : Discharge = 20 cumecs, Bed level = + 15.00 m, Bed width = 18 m, F.S.L. = + 17.00 m, ultimate bed level = + 14.75 m, ultimate FSL = + 17.75 m. Velocity of flow = 0.5 m/s. Canal bank top width = 2 m. on both sides. Top band level = + 18.50 m.
Drain : Catchment area = 5 sq.km, Bed level of drain = + 13.00 m, MFL = + 14.00 m, Hard soil at = + 12.00 m. Assume Ryves coefft as 15. Design : (a) The water way of aqueduct ; (b) Transition and bank connections.

Draw a neat sketch of a longitudinal cross section along the canal. (12 marks)

19. A hydel power station working under a head of 110 m with an installed capacity of 85000 kW. Supplies 12×10^4 K in a day of 24 hrs. Find the static load factor. (12 marks)

Or

20. (a) Write short notes on :
1 Pondage ; 2 Storage ;
3 Fore-bay ; 4 Firm power. (8 marks)
(b) What is a surge tank? Discuss its function. (4 marks)

[5 × 12 = 60 marks]