

Time: 3 Hours

Max. Marks. 80

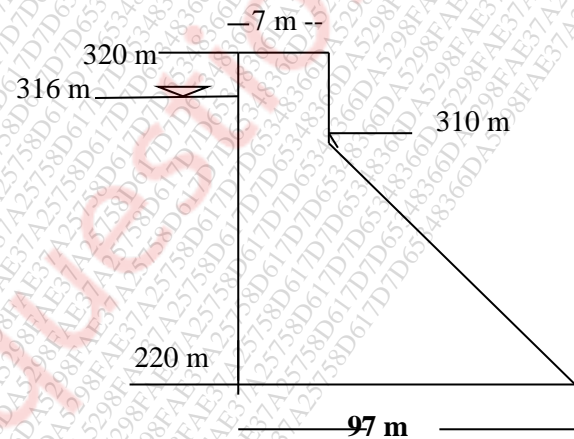
Note: -

1. Question 1 is compulsory and Solve any 3 question out of remaining Questions
2. Assume suitable data wherever necessary and state the assumptions made.
3. Diagrams / sketches should be given wherever necessary.
4. Use of logarithmic table, drawing instruments and non programmable calculators is permitted.
5. Figures to the right indicate full marks.

Q. 1 Solve any five**20**

- A** Define spillway and what are its functions?
B What are the qualities of good siphon?
C What are the forces acting on a gravity dam?
D Write a note on canal escape.
E What do you understand by a fall in canal? Why it is necessary?
F Enumerate various types of linings used for canal.

Q.2 **A** Fig shows a section of a Gravity Dam build in concrete. Take unit weight of concrete as 24 KN/m^3 , specific weight of water as 10 KN/m^3 , Permissible shear stress of joint = 1400 KN/m^2 , $\mu = 0.7$, $c=1$ allowable compressive strength of concrete = 1800 KN/m^3 . Considering weight of dam, water pressure and uplift pressure, Check the stability of dam and calculate principal and shear stresses



- B** Explain different types of joints in gravity dam **5**
C Differentiate between elementary & practical profile of gravity dam **5**

Q3 **A** Explain seepage control measures through embankment & foundation of earthen dam. **10**

B Explain the causes of failures of earth dams? **10**

- Q4** **A** Write a note on spillway crest gates. **8**
- B** Discuss various methods used for energy dissipation below spillways. **8**
- C** Compute the discharge over an ogee weir with coefficient of discharge equal **4**
to 2.4 at a head of 4m. The length of the spillway is 100 m. Neglect the
velocity of approach.
- Q5** **A** Using Lacey's theory, design an irrigation channel for the following data: **10**
Discharge $Q = 50$ cumecs, silt factor $f = 1$, side slopes = 0.5 H: 1 V.
- B** Compare Kennedy's and Lacey's silt theories. Why is Lacey's conception **10**
superior to that of Kennedy's?
- Q6** **A** Describe with the help of sketches various types of cross drainage works. **10**
- B** What is waterlogging? What are its ill-effects? **5**
- C** What is head regulator? State functions of a distributary head regulator and a **5**
cross regulator.
