



Time Allotted : 3 Hours

Full Marks :70

The Figures in the margin indicate full marks.
Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

1. Answer any ten of the following :

[1 x 10 = 10]

- (i) Which foundations are suitable for earthen and rock-fill dams? (
- (ii) What is the axis of a gravity dam?
- (iii) Which is the simplest type of spillway and may be constructed on small bunds or thin arch dams?
- (iv) Which dam is suitable for narrow valleys?
- (v) "The general bed level at the dam site should preferably be lower than that of the river basin." Is the statement correct?
- (vi) Which line acts as a dividing line between dry (or moist) and submerged line?
- (vii) "The percentage of energy dissipation in a hydraulic jump increases with the increase in the Froude number." Is the statement true or false?
- (viii) Is Tehri dam partly earthen and partly rockfill?
- (ix) Which foundation is not fit for concrete gravity dam or for rock-fill dams?
- (x) Which failure occurs when the net horizontal force above any plane in the gravity dam or at the base of the dam exceeds the frictional resistance developed at that level? *Overturn failure*
- (xi) The foundation soil for the proposed site of the dam should be examined by which method?
- (xii) What are transverse joints in concrete gravity dams?

Group-B (Short Answer Type Question)

Answer any three of the following

[5 x 3 = 15]

2. Classify dams according to their (i) use and (ii) hydraulic designs. [5]
3. What are the location criteria for dam site? [5]
4. Explain about Grout curtain and Relief wells. [5]
5. How the uplift pressure diagram will get modified under [5]
 - i. The presence of a drainage gallery
 - ii. Tension crack near the heel of the dam?
6. Discuss energy dissipation in hydraulic jump. [5]

Group-C (Long Answer Type Question)

Answer any three of the following

[15 x 3 = 45]

7. With the help of neat sketches illustrate: [15]
 - a) Ogee spillway
 - b) Trough spillway
 - c) Side channel spill way.
8. What are the investigations required for dam site? [15]
9. (a) Enumerate and explain by neat sketches the different ways by which the earthen dams may fail. [9]
(b) Also suggest suitable precautions that should be under taken to avoid each type of failure. [6]
10. (a) Differentiate between the following: [8]
 - i) Diversion dam and gravity dam
 - ii) Rigid dam and non rigid dam
(b) Write a short note on foundation problem for dams and their remedies. [3]
(c) Discuss the various factors affecting the choice of type of dam. [4]
11. What are the factors for selection of site of dam? Explain in detail. [15]