

Bhartiya Institute of Engineering
And Technology, Sikar.

Department of Civil Engineering

Water Resources Engineering-II
(8CE1A)

MARKS = 20

Qo1 CA) → What are the essential requirements of spillways

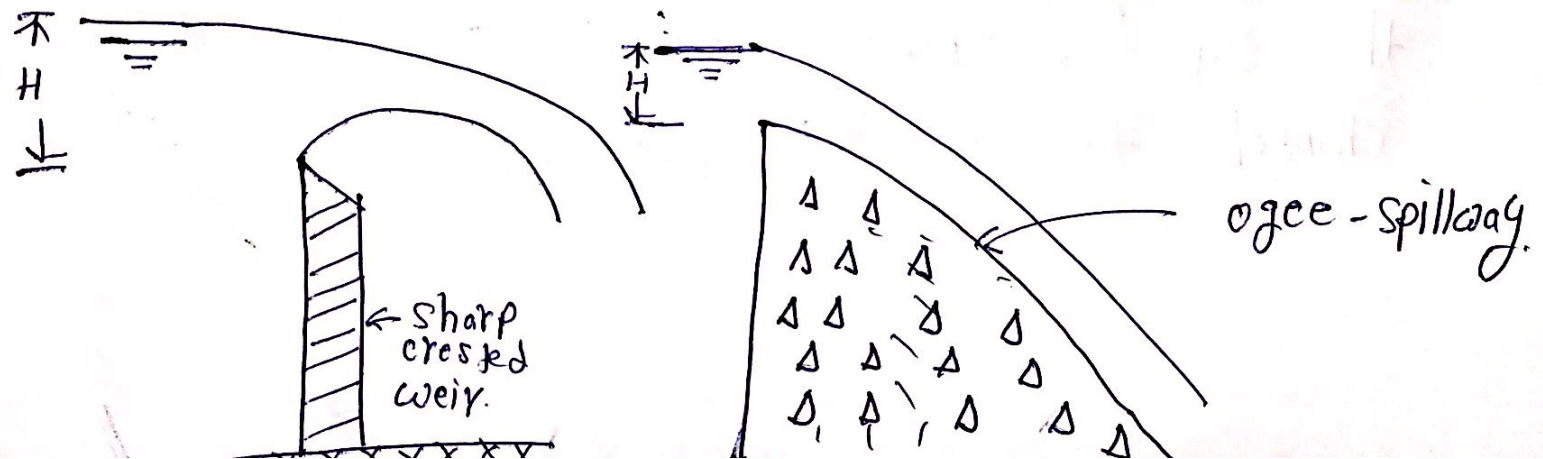
Ans01 → The essential requirements of a spillway are as follows-

- ① It must have adequate discharge capacity.
- ② It must be hydraulically and structurally safe.
- ③ The surface of the spillway must be erosion resistant.
- ④ The spillway must be so located that the spillway discharge does not erode or undermine the D/S toe of the Dam.
- ⑤ It should be provided with some device for the dissipation of excess energy.
- ⑥ The spillway discharge should not exceed the safe discharge capacity of the D/S channel to avoid its flooding.

Qo2(B) → Sketch and describe ogee shaped spillway along with its all components.

Ans02(B) A ogee shaped or overflow spillway is the most commonly used spillway. It is widely used with gravity dam, earth dams etc. Several earth and Rockfill dam are also provided with this type of spillway as a separate structure. An ogee shaped spillway is an improvement upon the free overfall spillway.

The essential difference b/w the free overfall spillway and the ogee-shaped spillway is that in the case of a free overfall spillway, the water flowing over the crest of the spillway drops vertically as a free jet clear from the D/S face.



Q03C) Explain the watershed Management.

Ans0C) The area enclosed within the watershed line is known as watershed area.

The watershed area may consist of hilly area and plane area. In hilly area there is no possibility of waterlogging. But the sediments carried by the tributaries badly affect the D/S plane area. In the plane area the rivers, streams etc. are silted up by the sediment and the water carrying capacity is reduced. Consequently the surrounding area may be submerged during the flood. Sometimes due to lack of proper drainage system the vast area may get waterlogged.

The cultivation becomes impossible and it creates problems for the villagers. It is also found that the lowlying area of some villages get submerged due to heavy rainfall.

Q04 (10) Write the short note on the following.

- (a) G.I.S (geographical Information System).
- (b) Computer Aided Irrigation Design.

Ans (a) G.I.S (geographical Information System) →

It is a system of hardware, software and procedures designed to support the capture management manipulation analysis modeling and display of specially referenced data for solving complex planning and management problems. Graphical information system today is an indispensable tool in the planning for tomorrow requirement, such as rail network, dam site location, urban development etc.

Ans (b) - Computer Aided Irrigation Design → In last 20 years computer aided designs have become more popular.

*Advantages → There are following -

- (i) Save time in designing and planning process of any irrigation projects.
- (ii) Solve complicated equations involving more than 10 variables.
- (iii) Designs are comparatively more accurate and economical.
- (iv) More useful even in future designs.