

Total No. of Questions : 6]

SEAT No. :

P175

[Total No. of Pages : 2

BE/INSEM/APR-501

B.E. (Civil Engineering)

401007 : DAMS AND HYDRAULIC STRUCTURES

(2015 Pattern) (Semester - II)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates :

- 1) Solve Q.1 OR Q.2, Q.3 OR Q.4 and Q.5 OR Q.6.
- 2) Neat sketches/diagrams must be drawn wherever necessary.
- 3) Figures to the right Indicate full marks for the sub-questions.
- 4) Assume suitable data if necessary and state them in your answer clearly.
- 5) Use of non-programmable pocket size electronic calculator is allowed.

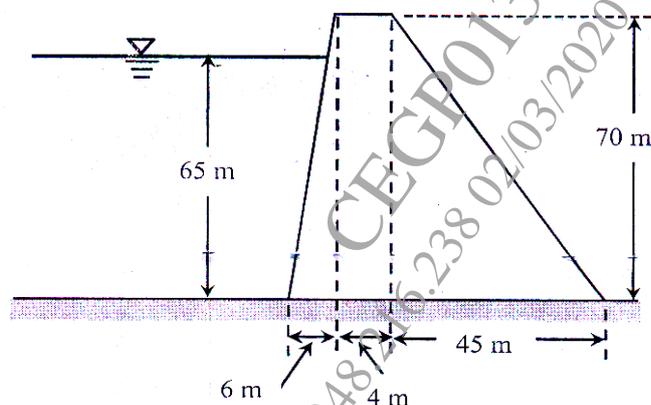
- Q1) a) Explain four factors considered for selection of an ideal site for a dam.[4]
b) Explain with sketches various types of piezometers (working & uses).[6]

OR

- Q2) a) Explain with sketch/sketches the instrumentation required for monitoring (Measurement of) joints and cracks in a concrete dam. [4]
b) i) Discuss the displacement and rehabilitation issues with reference to a big dam project.
ii) State three differences between overflow and non-overflow types of dams with the help of neat sketches.

[3 + 3]

- Q3) a) Discuss briefly 4 site conditions those are most suitable for an arch dam. [4]
b) For the dam section shown, *check the stability of dam in overturning.* Use the data given below. [6]



P.T.O.

- Specific weights of concrete and water are 24 kN/m^3 and 10 kN/m^3 respectively; F.S. = 1.50 for overturning.
- Consider only hydrostatic force, weight of water and uplift forces only (Neglect wind/ wave and seismic forces).
- There is no gallery and no tail-water.

OR

- Q4)** a) What is meant by 'elementary profile of gravity dam'? Draw an explanatory sketch. Using relevant formulas and assuming necessary values; show that maximum height of a small gravity dam is 88m. [4]
- b) What is meant by an arch dam? Give classification of arch dams. Show these types in neat sketches. [6]

- Q5)** a) If Froude's Numbers (Fr) is 3.9; describe the specific type of Indian Standard stilling basin (IS 4997-1968) for energy dissipation below spillway along with sketch. [4]

- b) Discuss the following clearly with respect to spillway crest gates :[3+3]
- Inspection of gates.
 - Maintenance of gates.

OR

- Q6)** a) Show sectional elevation and plan of a vertical lift (Sliding) gate provided for a spillway. Briefly explain its working. [4]

- b) An ogee spillway is to be designed for a discharge of $20 \text{ m}^3/\text{s}$ with upstream face vertical and downstream face having slope $1V : 0.8H$. Obtain the downstream profile of spillway with 1 m interval for the 'x' coordinates in the profile equation $x^{1.85} = 2.y.H^{0.85}$

Assume $C = 2.20$ and $L = 1 \text{ m}$. Neglect effects of end contractions and velocity of approach. [6]

