APR. -16/BE/Insem. - 1
B.E. (Civil)
Dams and Hydraulic Structures
(2012 Pattern) (Semester - II)

Time : 1 Hour]   *[Max. Marks :30*

Instructions to the candidates:

    1)   *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q6.*

    2)   *Neat diagrams must be drawn wherever necessary.*

    3)   *Figures to the right indicate full marks.*

    4)   *Use of electronic pocket calculator is allowed.*

    5)   *Assume suitable data if necessary.*

Q1) a)   On a river with uniform slope, two choices are given as follows. Choice 1 - 10 m high dam and choice 2 - two dams each of 5 m height. As we shift from choice 1 to choice 2, how it will affect the aspects of irrigation, power generation and flood control? **[6]**

     b)   Briefly explain any four instruments used for health monitoring of dam. **[4]**

OR

Q2) a)   What are the objectives of dam safety and instrumentation? **[4]**

     b)   Enlist eight factors governing choice of dam with respect to dam site. Explain any one of them in detail. **[4+2]**

Q3) a)   What is an elementary profile of a gravity dam? Explain with the help of diagram, how it is modified to practical profile? **[6]**

     b)   What is an arch dam? Discuss the choice of an arch dam. **[4]**

OR

P.T.O.

***Q4)* a)** A 20 m high concrete gravity dam has vertical upstream face and downstream face is inclined at 45°. The top and base widths are 2 m and 20 m respectively. The free board is 2 m. Take weight densities of water and concrete as 10 kN/m^3 and 24 kN/m^3 respectively. Determine the factor of safety against overturning by neglecting earthquake, tail water and consider full uplift. **[8]**

   b) Write a short note on buttress dam. **[2]**

***Q5)* a)** Design an ogee spillway by USWES method for the following data.

   Design discharge   =   5000 cumec

   Maximum reservoir level   =   500 m

   River bed level   =   478 m

   Effective length of spillway =   400 m

   Slope of upstream face   =   Vertical

   Slope of downstream face   =   0.8 H to 1V

   Coefficient of discharge 'C' =   2.1

   Determine RL of crest of spillway and downstream profile. **[8]**

   b) Enlist various components of storage power plant. **[2]**

<div align="center">OR</div>

***Q6)* a)** Write a note on USBR type III stilling basin. **[4]**

   b) Explain why the surface of radial gate is made concentric with trunnion axis. **[2]**

   c) Define the terms : **[2+2]**

   i.   Peak load

   ii. Load factor

<div align="center">ೞಾಯಾಯ</div>

BE/ InSem. - 1   **2**