Total No. of Questions :6]

SEAT No. :

P113

[Total No. of Pages :2

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]**

OR

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