Total No. of Questions : 6]

SEAT No. :

P5

[Total No. of Pages : 2

# APR.-17/BE/Insem.-5

## B.E. (Civil)

## HYDROPOWER ENGINEERING

## (2012 Pattern) (Elective - III(c))

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

***Instructions to the candidates:***

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right side indicate full marks.***
3) ***Use of Calculator is allowed.***
4) ***Assume Suitable data if necessary.***

***Q1)*** a) Explain the present status of hydropower generation in India. **[5]**

b) What are the effects of climate change and green house effects on hydropower generation and its development? **[5]**

OR

***Q2)*** a) Explain various trends in energy use patterns in India. **[5]**

b) Distinguish between thermal power and hydro power. **[5]**

***Q3)*** a) Draw a schematic layout of hydro electric power plant. Enlist the functions of transformer, and penstock. **[4]**

b) What a detail note on: run of river plant with and without pondage.**[6]**

OR

***Q4)*** a) What is surge tank? What are the different types of surge tank? Explain with the help of neat sketches. What are the functions of surge tanks?**[6]**

b) What are the criteria for the selection of site for hydro electric power plant? **[4]**

***P.T.O.***

***Q5)*** a) A run of river hydro electric power station is proposed across a river at a site where a net head of 15m is available on the turbine. The river carries a sustained minimum flow of 30 cumec with the load factor of 70%. Plant efficiency is 50%. Determine the maximum generating capacity of the generator to be installed at the power house. If the daily load pattern includes 21 hours average load and 3 hours of peak load, determine the volume of pondage to be provided to supply the daily demand. **[5]**

b) Define diversity factor, demand factor, connected load, Firm power and secondary power. **[5]**

OR

***Q6)*** a) Show that capacity factor is equal to product of load factor and utilization factor. **[4]**

b) A load on hydel plant varies from minimum of 10000 kW to a maximum of 50000 kW. Two turbo generators of capacities 30000 kW each have been installed. Calculate **[6]**

i) Total installed capacity of the plant

ii) plant factor

iii) maximum demand

iv) load factor

v) utilization factor