Total No. of Questions : 12]

SEAT No. :

P1927

[Total No. of Pages : 3

[5254]-26

B.E. (Civil)

HYDROPOWER ENGINEERING

(2008 Pattern) (Open Elective)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answer to the sections should be written in separate books.***
2) ***Neat diagrama must be drawn wherever necessary.***
3) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Explain the process of Nuclear power generation. Why nuclear power is considered as positive power source of future. **[8]**

a) State any eight constraints on Hydropower generation. **[8]**

OR

Q2) a) What are the different investigation required to be executed before initialing the hydropower project. **[8]**

b) State any four constraints on development of tidal power and any four constraints on development of wind power. **[8]**

Q3) a) Based on the parameter (i) unit rating and (ii) Head, state the classification of small and micro Hydro Power. **[8]**

b) What is storage power plant? Draw its layout and explain the components of storage power plant with its functioning. **[8]**

OR

Q4) a) State the different types of runoff river plants. Explain the components and their functions. **[8]**

b) Differentiate between Base load and peak load plant. **[8]**

P.T.O.

Q5) a) What is load duration curve? With the help of graph explain its significance and application. **[8]**

b) A load on hydel plant varies from minimum of 10000 kW to a maximum of 40000 kW. Two turbo generaters of capacity 22000 kW each have been installed. Calculate. **[10]**

i) Total installed capacity of plant.

ii) Plant factor

iii) Maximum demand

iv) Load factor

v) Utilisation factor

OR

Q6) a) Differentiate between base load plant and peak load plant. **[8]**

b) The runoff river hydropwer plant has inflow of 30 cumeas and it works on head of 40m with a provision for pondage to meet daily demand with load factor of 75%. Determine the power generation capacity of plant at 85% over all efficiency what amount of pondage is needed it the plant operates at the peak stations for six hours? **[10]**

SECTION - II

Q7) a) Explain any four equipments for power house. **[8]**

b) Differentiate between surface power house and underground power house. **[8]**

OR

Q8) a) With a neat layout explain components, their function and working of dam toe power house. Which type of turbine is preferred in dam toe power house? Why? **[8]**

b) What is meat by instrumentation of power house. **[8]**

Q9) a) Differentiate betwen reaction turbine and impulse turbine. **[8]**

b) Determine number of turbines and diameter of the runner for a power plant having 30 cumees inflow, 15m head the efficiency of the turbine is 80% with the speed of 200 rpm. Assume the specific speed as 225 and speed ratio as 0.8. **[10]**

OR

Q10)a) What is significance of surge tank and state its advantages with neat sketch. **[8]**

b) Design a pelton wheel turbine to find (i) Q (ii) No. of jets. (iii) Dia of Jet (iv) Dia of wheel. **[10]**

Q11)a) Explain in detail different criteria for economic considerations of Hydroelectric power plant. **[8]**

b) What are the factor governing the pricing of electricity. **[8]**

OR

Q12)a) As per electricity act 2003, what are the duties of transmission Liacencens. **[8]**

b) Explain the concept of carbon credits, justify Hydropower as green power. **[8]**