Total No. of Questions : 12]

SEAT No. :

P2655

[Total No. of Pages :3

[5154]-26
B. E. (Civil)
HYDROPOWER ENGINEERING
(2008 Pattern)(Semester-II)(401008DC)(Open Elective)(Elective-II)

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

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6 from section-I and Q7 or Q8, Q9 or Q10, Q11 or Q12 from section-II.***
2) ***Assume suitable data if necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Neat diagrams must be drawn wherever necessary.***

SECTION-I

Q1) a) What is meant by hydrological analysis of power plant? Explain with an example. **[8]**

b) What is meant by hydropower? Compare Hydropower with thermal power with respect to Indian conditions. **[8]**

OR

Q2) a) Which are six major hydropower potential river systems exists in India? State the examples and significant hydropower stations established these systems. **[8]**

b) Explain process of Nuclear power generation why Nuclear power is considered as positive power source of future? **[8]**

Q3) a) Explain classification of Hydropower plant based on. **[8]**

i) Function
ii) Plant capacity
iii) Head
iv) Location

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

OR

Q4) a) What are components of pumped storage plants and its classification based on inflow and reservoir capacity. **[8]**

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

Q5) a) Explain the significance of load prediction. What are the different methods of load prediction. Explain any one. **[8]**

b) A run of river hydro electric power station is proposed across a river at a site where a net head of 15 m is available on the turbine. The river carries a sustained minimum flow of 20 cumecs with the load factor of 71%. Plant efficiency is 60%. Determine the maximum generating capacity of the generator to be installed at the power house. If the daily load pattern includes 21 hrs average load and 3 hrs peak load. Determine the volume of pondage to be provided to supply the daily demand. **[10]**

OR

Q6) a) What is load duration curve? With the help of graph explain its significance and applications. **[8]**

b) The load on hydal plant varies from a min. of 10,000 kW to maximum of 35,000 kW. Two turbo generator of capacities 22,000 kW each have been installed. Calculate **[10]**

i) Total installed capacity of the plant

ii) Plant factor

iii)Maximum demand

iv)Load factor

v) Utilisation factor

SECTION-II

Q7) a) Differentiate between surface power house and underground power house. **[8]**

b) What are the safety requirements of power house. **[8]**

OR

Q8) a) State any four power plant equipments and their functions with sketch. **[8]**

b) Sketch the typical layout of power house and show all components. State function of all components. **[8]**

Q9) a) What is the significance of surge tank and state its advantages. **[8]**

b) Determine the number of turbines and diameter of the runner for a power plant having 30 cumecs inflow, 15 m 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) State the design steps of different parameters of Impulse turbine. **[8]**

b) Pelton wheel of mean bucket speed 10 m/s with a jet of water rate 700 lit/sec under head of 30m, deflection angle is 160º. Calculate power given by water to runner and hydraulic efficiency of turbine take $C_v = 0.98$. **[10]**

Q11)a) What are the provisions related to safety and electricity supply as per electricity act 2003? **[8]**

b) What is the concept of carbon credits? Explain its significance. **[8]**

OR

Q12)a) Enlist duties of transmission Licences. **[8]**

b) As per electricity Act 2003. State the function of load dispatch centre. **[8]**

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