Total No. of Questions : 12]

SEAT No. :

P3308

[Total No. of Pages : 3

[4959]-26

B.E. (Civil)

HYDROPOWER ENGINEERING (Open Elective)

(2008 Pattern)

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

Instructions to the candidates:

1) ***Answer any three questions from Section-I and three questions from Section-II.***
2) ***Answer to the two sections should be written in separate answer booklet.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) Explain concept, process, advantages and limitations of : **[8]**

i) Nuclear power

ii) Tidal power

b) What are the different investigations required to be executed before initiating the hydropower plant project? **[8]**

OR

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

b) For each state four constraints for development of tidal power and wind power. **[8]**

Q3) a) Classify and explain different types of pumped storage plants at least two with sketch. **[8]**

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

OR

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Q4) a) Explain the location and main components of tidal plant in detail. **[8]**

b) Explain the classification of hydropower plant based on : **[8]**

i) Function

ii) Plant capacity

iii) Head

iv) Location

Q5) a) Why it is necessary to predict future load demand? What are the methods of load forecasting? **[8]**

b) The load on hydel plant varies from a minimum of 12000 kW to maximum of 44000 kW. Two turbo generators of capacities 22000 kW each have been installed. Calculate ; **[10]**

i) Total installed capacity of the plant

ii) Plant factor

iii) Maximum demand

iv) Load factor

v) Utilization factor

OR

Q6) a) Define and state equation for : **[8]**

i) Load factor

ii) Capacity factor

iii) Utilisation factor

iv) Plant factor

b) A river has a constant flow of 40 cumers with the head of 15 m considering overall efficiency of 80% determine : **[10]**

i) Firm capacity of run of river plant for 8 hrs without pondage

ii) Pondage factor

iii) Firm capacity of plant with pondage

iv) Volume of pondage

SECTION - II

Q7) a) What is meant by Instrumentation of power house. **[8]**

b) Explain constructional and design features of generator in hydropower generation. **[8]**

OR

Q8) a) Explain the criteria for dimensions of super structures bays for power house. **[8]**

b) Differentiate between head development underground power house and tail development underground power house. **[8]**

Q9) a) Determine the number of turbines and diameter of runner for a power plant having 40 cumers inflow 20 m head. The efficiency of turbine is 75% with the speed of 200 rpm. Assume the specific speed as 250 and speed ratio as 0.80. **[10]**

b) Explain classification of turbines according to various criteria in detail. **[8]**

OR

Q10) a) Write all steps to design the different parameter of reaction turbines with sketch. **[10]**

b) With the help of sketch explain governing of impulse turbine. **[8]**

Q11) a) Explain the duties of electricity generating companies in detail. **[8]**

b) Explain the concept of carbon credit and give its significance. **[8]**

OR

Q12) a) What are the functions of state load dispatch centres as per Electricity act 2003 ? **[8]**

b) Explain the participation of private sector in economics of Hydroelectric power. **[8]**