Total No. of Questions : 12]

SEAT No. :

P1691

[Total No. of Pages :4

[4859]-26
B.E. CIVIL
c-HYDROPOWER ENGINEERING
(2008 Pattern) (Semester-II)(401008) (Open Elective)

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

Instructions to the candidates:

1) ***Attempt any 3 questions from each section.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Figures to the right indicate full marks.***
4) ***Draw neat and labeled diagrams wherever necessary.***

SECTION-I

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

i) Nuclear power and

ii) Tidal power.

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

OR

Q2) a) Explain the process of advantages and limitations of **[8]**

i) Thermal power

ii) Wind power.

b) Explain process of Nuclear power generation 1 Why Nuclear power is considered as positive power source of future? **[8]**

Q3) a) Explain the classification of hydropower plant based on

i) function

ii) Plant capacity

iii) Head

iv) Location . **[8]**

P.T.O.

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

OR

Q4) a) What is storage or valley dam plant ? Draw its layout and explain the component of storage power plant with its function. **[8]**

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

Q5) a) Explain the load duration curve on the basis of **[8]**

i) Concept

ii) Significance

iii) Application

iv) Graph.

b) The load on hydal plant varies from a min of 10,000 kW to maximum of 35000 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.

OR

Q6) a) What is load predicted and its significance? What are different methods of load prediction? State any two mathematical equation of load prediction .**[8]**

b) A river has a constant flow of 40 cumecs with the head of 15m 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 powerhouse . **[8]**

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

OR

Q8) a) Describe any four powerplant equipments and their functions. **[8]**

b) 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 and why? **[8]**

Q9) a) Derive the equation for height of draft tube so as to install reaction turbine at appropriate working of pressure. **[8]**

b) A penstock supply water from a dam to pelton wheel with gross head of 900 m and $\frac{1}{3}$ rd of it is lost in friction. The Q=4 m^3/sec and is deflected through 165°. Find horse power of runner and hydraulic efficiency. Take Cu=0.48 Cv-0.98.

Assume smooth plate without any shock. **[8]**

OR

Q10)a) Differentiate between reaction turbine and lmpulse turbine. **[8]**

b) A pelton wheel is to be designed for the following specifications. Shaft power 11772 kW, Head=380 m Speed 750 rpm, Overall efficiency=86%. Jet dia is not to exceed one sixth of wheel diameter Determine

i) Wheel diameter

ii) The no. of jets required

iii) Dia of Jet
Take Kv_1=0.985 & Ku_1=0.45. **[8]**

Q11)a) What is pricing of electricity? State any four factor Governing pricing of electricity. **[9]**

b) What are the functions of state load dispatch centre. **[9]**

OR

Q12)a) Explain the participation of private sector in economics of Hydroelectric power. **[9]**

b) Explain concept of corbon credit. Justify hydropower as grean power. **[9]**