

Total No. of Questions : 12]

SEAT No. :

P1154

[Total No. of Pages : 3

[4659] - 26

B.E. (Civil) (Semester - II)
HYDROPOWER ENGINEERING
(2008 Pattern) (Open Elective - (c))

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) *Answer 3 questions from Section - I and 3 questions from Section - II.*
- 2) *Answers to the two sections should be written in separate books.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*
- 5) *Assume suitable data, if necessary.*

SECTION - I

- Q1)** a) Explain process of Nuclear power generation. Why Nuclear power is considered as positive power source of future? [8]
- b) Which are six major Hydropower potential river systems exists in India? State the example of significant Hydropower stations established these systems. Also explain the historical development of Hydropower in India. [8]

OR

- Q2)** a) Differentiate between Thermal power & Hydropower with respect to any eight points. [8]
- b) State any eight constraints on Hydropower generation. [8]
- Q3)** a) With neat sketch explain four types of Run of river plants. Also, state their components & functions briefly. [8]
- b) State classification of small & micro Hydropower developed based on (i) unit rating (ii) head. [8]

OR

P.T.O.

- Q4)** a) Based on equipment parameters, classify three types of pumped storage power plants. [8]
- b) With neat sketch explain, components, their function & working of valley power plant. [8]
- Q5)** a) A run of river plant operates as a peak load station. Its weekly load factor is 30% & its entire capacity is firm capacity for a stream flow of 25 cumecs with operating head of 15m. The rated installed capacity of peak load station is 20000kw. Determine
- i) Minimum flow in river so that the peak load station may serve as base load station.
- ii) Daily load factor. Consider efficiency= 80%. [10]
- b) What is load predicted & its significance? What are different methods of load prediction? State any two mathematical equations for load prediction. [8]

OR

- Q6)** a) A river has a constant flow of 40 cumecs with the head of 10m 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.
- b) Differentiate between Base load plant & Peak load plant. [8]

SECTION - II

- Q7)** a) Compare merits & demerits of surface power house & Underground power house. [8]
- b) With a neat layout, explain components, their functions & working of dam toe power house. Which type of turbine is preferred in dam toe power house & why? [10]

OR

Q8) a) Differentiate with the help of sketch the working of intermediate development underground power house & tail development underground power house. [10]

b) State names & functions of three bays of superstructure of power house along with sketch. [8]

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

b) With the help of sketch, explain governing of Impulse turbine. [8]

OR

Q10) a) State any eight formulae to design the different parameters of Impulse turbine. [8]

b) State the classification of turbines on the basis of direction of flow, head, specific speed & hydraulic action. [8]

Q11) a) What are functions of state load dispatch centers as per Electricity act 2003? [8]

b) Explain concept of carbon credits. Justify hydropower as green power. [8]

OR

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

b) State any four factors governing the pricing of electricity. [8]

