Total No. of Questions : 8]

SEAT No. :

PC2792

[Total No. of Pages : 3

[6352]-16
S.E. (Electrical Engineering)
POWER GENERATION TECHNOLOGIES
(2019 Pattern) (Semester - III) (203141)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable additional data, if required.***
5) ***Use of Non-programmable calculator is allowed.***

Q1) a) Write a short note on Small, mini and micro hydro power plant. **[4]**

b) Differentiate between Kaplan and Pelton wheel turbine. **[6]**

c) The average rate of inflow during 12 months for a river are as under. **[7]**

Month	Discharge in m^3/s	Month	Discharge in m^3/s
January	200	July	1600
February	400	August	1200
March	600	September	2000
April	2400	October	1200
May	1200	November	800
June	1800	December	400

Draw the hydrograph. Determine the average inflow and the power that can be developed at an effective head of 90M. Assume overall generation efficiency to be 80%

OR

Q2) a) Describe the advantages of hydroelectric power plant. **[4]**

b) Explain the function of the following component in HPP. **[6]**

i) Dam

ii) Penstock

c) Draw layout of hydroelectric power plant and explain functions of different components. **[7]**

P.T.O.

Q3) a) Compare vertical axis and horizontal axis wind turbine. **[4]**

b) Describe the types of wind turbine electrical generators and explain any one. **[6]**

c) With neat diagram explain different components and their function in horizontal axis wind turbine. **[8]**

OR

Q4) a) Explain pitch control techniques used in wind turbine to extract maximum power. **[4]**

b) Define cut in, cut out and rated speed as applied in wind energy system with suitable diagram. **[6]**

c) Derive the relation of power in wind and explain impact of tower height on power generation in wind energy system. **[8]**

Q5) a) Explain impact of temperature and insolation on I-V curves of PV cells. **[4]**

b) Explain flat type solar collector and its application. **[6]**

c) With the help of diagram explain the working principle of solar thermal power. **[7]**

OR

Q6) a) Explain the following terms in solar power system. **[4]**

i) Concentration ratio

ii) Cloudy index

b) Discuss the working of a parabola collector with neat sketch. **[6]**

c) Explain the working of PV cell and simplest Equivalent Circuit for a Photovoltaic cell. **[7]**

Q7) a) Write a short note on Geothermal energy. **[4]**

b) Describe the fuel cell. How they are used for energy storage requirement? **[6]**

c) Write a short note on. **[8]**

i) Geothermal energy

ii) Ocean energy

OR

Q8) a) What is a grid connected renewable system, explain with neat sketch. **[4]**

b) Explain the process of municipal solid waste to energy conversion. **[6]**

c) Write a short note on **[8]**

i) Biomass energy

ii) Fuel cell energy

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