Total No. of Questions : 8]

SEAT No. :

PE4245

[Total No. of Pages : 2

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S.E. (Electrical Engineering)

POWER GENERATION TECHNOLOGIES

(2019 Pattern) (Semester - III) (203141)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Solve Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.***
2) ***Figures to the right indicates full marks.***
3) ***Neat Diagram must be drawn wherever necessary.***
4) ***Assume Suitable additional data if necessary.***
5) ***Use of non-programmable calculator is allowed.***

Q1) a) Describe important points for site selection of hydro power station. **[4]**

b) Explain the function of following component in Hydro Power Plant **[6]**

i) Penstock

ii) Surge tank

iii) Dam

c) Explain the different types of turbine used in hydro power plant. **[8]**

OR

Q2) a) Explain Hydrograph **[4]**

b) Explain advantages & disadvantages of hydro power plant. **[6]**

c) Draw the schematic layout of a hydroelectric power plant and elaborate functions of each component and its operation. **[8]**

Q3) a) Write advantages & disadvantages of wind energy. **[3]**

b) Explain how the wind pattern affects power generation in wind energy system. **[6]**

c) Explain grid connected wind energy conversion system with the help of neat diagram. **[8]**

OR

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Q4) a) Describe the historical development of wind turbine on global level. **[3]**

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

c) Derive the relation for the power in the wind & describe the Environmental impact of Wind Turbines. **[8]**

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

b) Define the terms in solar energy system **[6]**

i) Solar Constant

ii) Cloudy index

iii) Concentration Ratio

c) With the help of diagram explain the concept of solar thermal power plant. **[8]**

OR

Q6) a) What is the need of solar hybrid system? **[4]**

b) Explain the shading impact on I-V curves of PV cells. **[6]**

c) Explain the working of PV cell and Simplest Equivalent Circuit for a Photovoltaic cell. **[8]**

Q7) a) Write a short note on Biomass energy. **[3]**

b) Explain grid connected renewable systems & their requirements. **[6]**

c) Describe the following systems used in renewable energy systems : **[8]**

i) Stand alone

ii) Hybrid stands alone

OR

Q8) a) Write short note on Ocean thermal energy conversion. **[3]**

b) What is geothermal energy? Explain with sketch how it can be harnessed to generate electricity? **[6]**

c) Explain the process of municipal solid waste to energy conversion with diagram. **[8]**

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