B.Tech. SEM -VI Electrical 2014 Course (CBCS) : SUMMER - 2019

SUBJECT: ELECTIVE–II: RENEWABLE ENERGY SYSTEMS

Day: Friday
Date: 31/05/2019

S-2019-2737

Time: 02.30 PM TO 05.30 PM
Max Marks: 60

N.B.:

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Use of non programmable calculator is **ALLOWED**.
4) Assume suitable data, if necessary.

Q.1 **a)** Explain the classification of energy sources in brief. **(05)**

b) Write a detailed note on global warming and climate change. **(05)**

OR

a) Explain the concept of CDM. **(05)**

b) Discuss the factors favoring and against the renewable energy sources. **(05)**

Q.2 **a)** State and brief various types of wind turbines. **(05)**

b) Explain how tower height affects the various parameters in WES. **(05)**

OR

a) Explain how maximum power can be achieved by controlling speed. **(05)**

b) Discuss basic principle of wind energy conversion. List the types of generators used. **(05)**

Q.3 **a)** Write a note on "solar radiation measurements". **(05)**

b) Define: **(05)**

i) Latitud0
ii) e angle
iii) Declination angle
iii) Hour angle
iv) Zenith angle

OR

a) Discuss "solar thermal energy generation". **(05)**

b) Determine the local solar time and declination at a location Latitude 23 degree and 15 minutes North, Longitude 77 degree 30 minute East at 13.30 IST is June 19. Equation of time correction is given form standard table= - (1'01"). **(05)**

Q.4 **a)** What is photovoltaic effect? Explain briefly. **(05)**

b) Write a short note on 'silicon cell modules'. **(05)**

OR

a) Discuss grid connected system sizing, design layout, costing and payback periods. **(05)**

b) Discuss maximum power point tracking, grid autonomy and grid integration issues. **(05)**

Q.5 **a)** What is wave energy? Describe the constriction, working and limitations of float wave–power machine. **(05)**

b) What are the components of cell? Describe working theory of a Fuel Cell **(05)**

OR

a) Describe briefly the various methods of producing hydrogen. **(05)**

b) Explain with a schematic diagram the Anaerobic digestion system. **(05)**

Q.6 **a)** What do you mean by energy storage? Describe Battery maintenance and management. **(05)**

b) Discuss the Role of energy storage in modern Indian grid. **(05)**

OR

a) Give the comparison between battery and supercapacitor. **(05)**

b) Explain the pumped water energy storage. **(05)**

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