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Total Number of Pages : 02

B.Tech
PEE5J001

5th Semester Regular / Back Examination 2018-19
RENEWABLE ENERGY SYSTEMS
BRANCH : ELECTRICAL
Time : 3 Hours
Max Marks : 100
Q.CODE : E490

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right hand margin indicate marks.

Part- I

Q1 Short Answer Type Questions (Answer All-10) (2 x 10)

- What are primary and secondary energy sources
- What percentage of energy requirement is met by coal in India?
- What do you understand by the earth's albedo?
- Define concentration ratio of a solar collector
- Name three collectors requiring one- axis sun tracking.
- What are the direct and indirect gap materials?
- What is the effect of partial or complete shadowing of a cell in a module?
- What do you understand by gust?
- What are the factors responsible for distribution of wind energy on the surface of the earth?
- What do you understand by energy farming?

Part- II

Q2 Focused-Short Answer Type Questions- (Answer Any EIGHT out of TWELVE) (6 x 8)

- Discuss renewable and conventional forms of energy. High light their merits and demerits
- Discuss and differentiate between decentralized and dispersed generation.
- Discuss the parameter governing the performance of flat plate collectors
- Discuss and differentiate among evaporative cooling, absorption cooling and passive desiccant cooling methods, using solar energy
- Explain the current-voltage characteristic of solar cell .Also define the fill factor.
- Discuss the reason for low efficiency of solar cells.
- What do you understand by cell mismatch in a solar module and what are its implications?
- With the help of a diagram, discuss the power versus wind-speed characteristics of a wind turbine.
- With the help of block diagram, explain the functions of various blocks of a WECS.
- Explain the process of production of biogas from biomass. What are the main advantages of anaerobic digestion of biomass?
- Compare the relative performances of a floating drum and fixed dome type biogas plants
- Define hybrid energy systems. What was the need for hybrid systems?

Part-III

Long Answer Type Questions (Answer Any TWO out of FOUR)

Q3 Discuss the main features of various types of renewable and non-renewable energy sources and explain the importance of non-conventional energy sources in the context of global warming. **(8+8)**

Q4 Classify different types of solar thermal collectors and show the constructional details of a flat-plate collector. What are its main advantages? **(4+8+4)**

Q5 With the help of block diagrams explain the operations of standalone and grid interactive SPV systems **(8+8)**

Q6 Discuss different types of hybrid systems. **(16)**