

Time: 3 Hours

Marks :80

- Note -
1. Question No. 1 is compulsory.
 2. Attempt any three questions out of remaining five questions.
 3. Assume suitable data if necessary & justify the same.
 4. Figures to the right indicate marks.

Qu.1 Attempt any Four.

- (a) Differentiate between conventional and non-conventional energy sources. [5]
- (b) Draw the model of two junction solar cell. Also draw I-V and P-V characteristics of solar cell at STC. Specify the essential parameters on the characteristics. [5]
- (c) Explains the working of wind energy system along with its various components. [5]
- (d) Draw and discuss the static characteristics of fuel cell in brief. [5]
- (e) Write a short note on solar pond. [5]
- (f) Describe the working of Ocean energy conversation system. [5]

Qu.2 Discuss the working of liquid flat plate collector with neat diagram. State its [10]

- (a) advantages & limitations.
- (b) Explain the working of proton exchange membrane (PEMFC) fuel cell with neat diagram. [10]

Qu.3 Illustrate the significance of MPPT in Solar PV system with neat block diagram. [10]

- (a) Explain perturb and observe MPPT algorithms with the help of suitable block diagram.
- (b) Describe the construction and working of solar concentrating collectors with the help of neat diagram. List its advantages. [10]

Qu.4 Describe the power converter topology used for double feed induction generators [10]

- (a) (DFIG) in wind turbines.
- (b) What is balance of system? Explain the important parameters related to battery. [10]
(1) Battery capacity (2) Depth of Discharge (3) C-rating (4) Deep Discharge batteries.

Qu.5 List the classification of PV System. Discuss the various types of stand-alone PV [10]

- (a) system configurations in brief.
- (b) Draw and explain the wind power characteristics. Show that ideal maximum rotor efficiency is 59.3% in wind energy system. [10]

Qu.6 Analyze the impact of change in solar radiation and temperature on solar PV [10]

- (a) characteristics with a neat diagram.
- (b) Explain the working principle of Geothermal energy conversation system with neat diagram. [10]
