Q. Code: 210491

Reg. No. | | | | | | | | | |

M.E. / M.TECH. DEGREE EXAMINATIONS, MAY 2019

Second Semester

PD18011 – SOLAR AND ENERGY STORAGE SYSTEMS

(***Power Electronics and Drives***)

(Regulation 2018)

Time: Three Hours **Maximum : 100 Marks**

Answer **ALL** questions

PART A - (10 X 2 = 20 Marks)

1. Define Black body radiation.
2. Draw the I-V characteristics of photo voltaic cell.
3. List out the requirements of storage system for long term.
4. What is power conditioning in solar PV system?
5. What are the components of Grid connected PV system?
6. Mention some of design issues for central power station.
7. Compare PSCO and ERCOT Systems,
8. List out the merits and demerits of solar thermal energy storage system.
9. Define radiation hardness.
10. Brief about PV system in telecommunication.

PART B - (5 X16 = 80 Marks)

11. (a) Discuss in detail Fabrication of solar cells. **(16)**

(OR)

(b) (i) Explain the electrical characteristics of semiconductors used in PV cell. **(10)**

(ii) Write about PV cell interconnection. **(6)**

12. (a) Explain the design of stand alone PV system with an example. **(16)**

(OR)

(b) (i) Briefly address the protection issues in stand alone PV system. **(8)**

(ii) What do you understand in sizing of PV system? **(8)**

13. (a) Describe the components in a grid connected residential PV system and discuss the related issues. **(16)**

(OR)

(b) Explain the safety and economic aspects of the PV system. **(16)**

14. (a) Describe the impact of intermittent power generation in the context of cycling and emission. **(16)**

(OR)

(b) Explain the components and principle of operation of pumped hydro electric storage system with neat sketch. **(16)**

15. (a) Discuss the following applications of PV system. **(8+8)**

(a) Battery Charger

(b) Water Pumping

(OR)

(b) What is a solar car? Explain the design of a solar car in detail. **(16)**