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**Question Paper Code: 52954**

M.E. DEGREE EXAMINATION, JUNE 2016

Elective

Power Electronics and Drives

15PPE517 - NANOMATERIALS AND ENERGY SYSTEMS

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 20 = 100 Marks)

1. (a) Describe in detail about developments and implementation of nanotechnology based renewable energy technologies. (20)

Or

- (b) Explain the thin film solar cells and CIGS solar cells? Compare thin film and CIGS solar cells. (20)

2. (a) What is the need for battery? Also explain the types of battery with necessary diagram? (20)

Or

- (b) Write short notes on HEV and PHEV? Explain the effect of nano size on energy storage? (20)

3. (a) Explain in detail about electrode materials and hybrid nanostructures for super capacitors? (20)

Or

- (b) What are the types of electrolytes and also explain the electrolytes for super capacitors? (20)

4. (a) Describe in detail about hydriding and dehydriding kinetics? (20)

Or

(b) Write short notes on

(i) Catalyst of hydrogen production

(ii) Steam reforming

(iii) Water splitting (20)

5. (a) What is the principles of fuel cell and also explain the types of fuel cells? (20)

Or

(b) Discuss in detail about materials and fabrication methods for fuel cell technology? (20)

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