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Register Number:……..…

M.E. DEGREE EXAMINATIONS: DEC 2015

(Regulation 2014)

Third Semester

POWER ELECTRONICS AND DRIVES

P14PETE13 : Power Electronics in Wind and Solar Power Conversion

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. What is the sequence of ranking of the following states starting from highest wind power installation capacity? CO2 [K_1]
(i) Gujarat (ii) Rajasthan (iii) Maharashtra (iv) Tamil Nadu

a) iii, ii, i, iv b) ii, i, iv, iii

c) iv, i, iii, ii d) ii, iv, i, iii

2. The value of solar constant is approximately CO3 [K_1]

a) 6.5 kW/m^2 b) 1.36 kW/m^2

c) 3.64 kW/m^2 d) 10 kW/m^2

3. Solar energy travels through space by the process of CO2 [K_2]

a) Conduction b) Convection

c) Radiation d) Transportation

4. Match the following CO2 [K_1]

List I	List II
A. Solar energy	i. Penstock
B. Wind	ii. Fuel
C. Hydro	iii. Yaw
D. Thermal	iv. PV

a) iv, iii, i, ii b) iv, ii, i, iii

c) i, iii, iv, ii d) iii, i, ii, iv

5. With increase in height, wind speed CO3 [K_4]

a) Increases b) Decreases

c) Remains the same d) Can't say

6. Another name for a windmill is CO2 [K_2]

a) Wind farm b) Propeller

c) Wind station d) Wind turbine

7. Assertion (A): Wind energy is one of the conventional energy source CO1 [K_1]

Reason (R): It is renewable energy source

a) Both A and R are wrong b) Both A and R are correct

c) A is correct and R is wrong d) A is wrong and R is correct

8. A place where many wind turbines are installed together to produce electricity is called CO3 [K_1]

a) Wind farm b) Propeller collection

c) Wind station d) Wind turbine station

9. What does SPV stand for with respect to solar energy? CO1 [K_1]

a) Solid platevoltaic b) Solar platevoids

c) Solar photovoltaic d) Sun polar value

10. Cogeneration is the simultaneous generation of CO2 [K_2]

a) Heat and power b) Steam and condensate

c) Mechanical energy and power d) All of the above

PART B (10 x 2 = 20 Marks)

11. Write any four differences between conventional and renewable sources. CO1 [K_2]
12. List the split-up of wind power installed capacity in India. CO2 [K_1]
13. What are the instruments used for measuring solar radiation? CO3 [K_2]
14. What is the need for maximum power point tracking? CO2 [K_2]
15. State the basic principle of wind energy conversion. CO1 [K_1]
16. Classify WECS. CO1 [K_1]
17. What are matrix converters? CO2 [K_1]
18. List the limitations in grid connected solar system. CO2 [K_1]
19. Define reliability evolution. CO3 [K_1]
20. What are the types of cogeneration processes? CO1 [K_1]

PART C (6 x 5 = 30 Marks)

21.	State the MNRE rules and regulations.	CO2	[K_1]
22.	Enumerate the wind and solar survey in World.	CO1	[K_5]
23.	Describe the PV arrays.	CO1	[K_2]
24.	Explain the basic components of wind energy conversion system.	CO3	[K_2]
25.	Illustrate the operation of line commutated inverters with necessary waveforms.	CO1	[K_3]
26.	Draw and explain the operation of solar - PV hybrid systems.	CO2	[K_4]

PART D (4 x 10 = 40 Marks)

27.	Write short notes on (i) Solar water pumping (ii) Solar street lighting	CO2	[K_3]
28.	Explain with neat diagram the working of various types of wind generators.	CO1	[K_2]
29.	Describe the grid system characteristics and explain the grid connected solar system with a neat diagram.	CO3	[K_2]
30.	Describe working of power converter with circuit diagram and wave form for distributed power systems.	CO1	[K_2]

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