Register Number:……..

KUMARAGURU
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B.E DEGREE EXAMINATIONS: MAY 2017

(Regulation 2014)

Sixth Semester

ELECTRICAL AND ELECTRONICS ENGINEERING

U14EET605 : Renewable Energy Resources

COURSE OUTCOMES

CO1: Acquire the knowledge about various renewable energy sources

CO2: Explain the technological basis for harnessing renewable energy sources.

CO3: Will gain the knowledge of low electrical energy generation.

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Match the following according to its application CO2 [K_2]

List I	List II
A. Pyranameter	1. Solar Cell
B. Pyrheliometer	2. Total Solar Radiation
C. Sunshine recorder	3. Beam Solar Radiation
D. Photo Voltaic	4. Hours of bright sunlight

	A	B	C	D
(a)	2	3	4	1
(b)	3	2	1	4
(c)	1	2	3	4
(d)	3	1	2	4

2. In India minimum solar irradiation occurs in which month. CO1 [K_2]

a) March b) May

c) December d) August

3. Which of the following meters are used for solar irradiation measurements CO2 [K_2]

1. Pyranometer 2. Pyrheliometer 3. Multi meter 4.Ohmmeter

a) 1,4 b) 2,3

c) 1,2 d) 3,4

4. Which of the first country to implement deregulation CO2 [K_1]

a) England b) USA

c) Chile d) Germany

5. **Assertion:** The surface of sun is maintained 5800^0 K CO3 [K_2]

Reason: Due to fission reaction

a) Both A and R are Individually true and R is the correct explanation of A b) Both A and R are Individually true but R is not the correct explanation of A

c) A is true but R is false d) A is false but R is true

6. As per betz criterion, the maximum energy extractable by an ideal wind turbine is CO3 [K_2]

a) 29% of that available in wind b) 39% of that available in wind

c) 49% of that available in wind d) 59% of that available in wind

7. Arrange the following renewable sources of energy production in India in decending order CO2 [K_1]

1) Bio mass 2) Small Hydro 3) Wind 4) Solar

a) 1-3-4-2 b) 4-3-1-2

c) 3-4-2-1 d) 3-4-1-2

8. Stalled flow in wind power generation occurs when the value of wind blade incidence angle is CO3 [K_2]

a) 0 degree b) 180 degree

c) 0 to 16 degree range d) Beyond 16 degree

9. **Assertion (A):** The wind speed and turbine speed are related to each other. CO2 [K_3]

Reason(R): This results in minimum power extraction at tip speed ratio.

a) Both A and R are Individually true and R is the correct explanation of A b) Both A and R are Individually true but R is not the correct explanation of A

c) A is true but R is false d) A is false but R is true

10. A two blade wind turbine produces maximum power when the tip speed ratio is equal to CO3 [K_2]

a) π b) 2π

c) 3π d) 4π

PART B (10 x 2 = 20 Marks)

(Answer not more than 40 words)

11. Give the percentage distribution of various renewable energy generation in India CO1 [K_1]

12. List various issues of DG integration with gird. CO2 [K_2]

13.	Define Zenith angle in Solar Geometry	CO2	[K_2]
14.	What is Albedo in Solar radiation?	CO2	[K_1]
15.	State the advantages of Wind rose representation of Wind datas.	CO3	[K_3]
16.	Define tip speed ratio in Wind power generation	CO2	[K_2]
17.	What are the different types of Bio fuels?	CO2	[K_2]
18.	Compare floating drum and fixed dome type Bio mass plants	CO3	[K_2]
19.	List the various types of turbines available for hydro power generation.	CO2	[K_1]
20.	What is a fuel cell and what are its advantages?	CO2	[K_2]

Answer any FIVE Questions:-

PART C (5 x 14 = 70 Marks)

(Answer not more than 300 words)

Q.No. 21 is Compulsory

21.	Describe in detail about deregulation and its concepts in power industry.		CO1	[K_2]
22.	With neat sketches explain the operation of flat plate and concentrating type solar thermal collectors? Compare both the technologies.		CO2	[K_2]
23.	(a) Sketch the diagram of HAWT and explain the functions of the main components (b)Discuss various types of drive schemes used in wind turbines	(7) (7)	CO2	[K_2]
24.	Explain with neat sketches the various types of bio gas plants. Also compare the merits and demerits of the plants.		CO3	[K_2]
25.	Explain the principle of Photo Voltaic Conversion technology. Explain the Solar cell types and its characteristics with its equivalent circuit.		CO2	[K_2]
26.	With the help of a schematic diagram, explain the operation of closed cycle MHD generating system		CO3	[K_2]
27.	Discuss in detail different types of solar irradiation measurement techniques with neat sketches.		CO2	[K_2]

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