

Roll No



**PRESIDENCY UNIVERSITY  
BENGALURU**

**SET A**

**SCHOOL OF ENGINEERING  
END TERM EXAMINATION - JAN 2024**

**Semester :** Semester III - 2022

**Course Code :** EEE3024

**Course Name :** Solar Photovoltaic and Wind Energy Systems

**Program :** B.Tech.

**Date :** 10-JAN-2024

**Time :** 9:30AM - 12:30 PM

**Max Marks :** 100

**Weightage :** 50%

**Instructions:**

- (i) Read all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and non-programmable calculator are permitted.
- (iv) Do not write any information on the question paper other than Roll Number.

**PART A**

**ANSWER ALL THE QUESTIONS**

**5 X 2M = 10M**

1. Define, (1) Solar declination (2) Altitude angle  
(CO1) [Knowledge]
2. What is the principle of working of Tidal Barrage.  
(CO2) [Knowledge]
3. Which generator is used for variable speed Wind Energy Conversion Scheme?  
(CO3) [Knowledge]
4. Write two advantages and two disadvantages of wind energy.  
(CO2) [Knowledge]
5. Write a short note on Darrieus wind mills (4 points)  
(CO4) [Knowledge]

## PART B

ANSWER ALL THE QUESTIONS

5 X 10M = 50M

6. Draw a neat and labelled diagram of Electrical schematic diagram of a Grid-connected variable speed wind power system. Also mention four conditions which must be satisfied before the synchronizing switch will permit the closure.  
(CO1) [Comprehension]
7. There are two conditions for the actual Solar cell in its equivalent circuit. Explain the two conditions and also provide voltage and current equation for the equivalent circuit of the PV cell.  
(CO2) [Comprehension]
8. University campus is in the process of creation of solar energy data base at different locations. To select suitable locations for setting up of Solar power plant it is important to measure the solar radiation. In the above situation explain the suitable device to measure the radiation.  
(CO2) [Comprehension]
9. In the context of establishing a solar energy database across various locations on a university campus for the purpose of setting up solar power plants, what would be the appropriate device to measure solar radiation, and why is it considered suitable for this task?  
(CO3) [Comprehension]
10. Being a Wind Turbine designer, explain any FIVE standard parameters which required to design a Wind mill  
(CO4) [Comprehension]

## PART C

ANSWER ALL THE QUESTIONS

2 X 20M = 40M

11. Explain Double Output Induction Generator with Current Source Inverter with a neat and labelled diagram. Also mention two advantages of the same.  
(CO3) [Application]
12. With neat diagram, Explain the following:  
(1) Stand alone PV System  
(2) Variable speed Wind Energy schemes  
(CO4) [Application]