Electrical Power System (CBCS Pattern) M.Tech. Second Semester CBCS

PEPS23 - Renewable Energy System

P. Pages : 1 **GUG/W/18/11023**

Time : Three Hours * 3 1 4 4 * Max. Marks : 70

Notes : 1. All questions carry equal marks.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Use of non programable calculator.
5. Answer **any five** questions.

1. a) What are the factors favoring and against conventional energy sources. **7**

b) "Energy consumption pattern of any nation leads to National Energy Efficiency programme", Justify the statement. **7**

2. a) What is the principle of solar photovoltaic power generation? What are the main elements of a PV System. **7**

b) Explain in brief I, II and III generation of solar cells? **4**

c) Write notes on Beam and Diffuse radiation. **3**

3. a) Derive the expression for power developed due to wind. **6**

b) Write short notes on. **8**
i) Darrius Rotor ii) Wind energy storage

4. a) How are Gasifiers classified? What is Pyrolysis? **7**

b) What are the main types of OTEC power plants? Describe the working of its **4**

c) What are the main plants proposed for energy plantation especially in India. **3**

5. a) Explain in brief SOC and DOD concept of various types of batteries. **7**

b) Explain in detail electrical storage systems? **7**

6. a) Define the following terms: **7**
i) Altitude Angle. ii) Zenith Angle.
iii) Latitude Angle. iv) Solar azimuth Angle.

b) Explain rural-wind- diesel hybrid System. **7**

7. a) The basin area of a tidal power plant is $20x10^6$ m^2. The tidal range is 8m, calculate the energy generated in kwh. **7**

b) What are the different variable associated with wind energy, wind power and wind turbine operation? **4**

c) Name the various models of biogas plant. **3**

8. Write short notes on **any two**. **14**
a) Bio methanation.
b) Wave energy.
c) Prospects of geothermal energy in context to India.

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