PEPS23 - Renewable Energy System

P. Pages : 1

Time : Three Hours

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GUG/S/23/11023

Max. Marks : 70

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Notes : 1. All questions carry equal marks.
2. Answer **any five** questions.
3. Due credit will be given to neatness and adequate dimensions.
4. Assume suitable data wherever necessary.
5. Illustrate your answers wherever necessary with the help of neat sketches.
6. Use of slide rule, Logarithmic tables is permitted.
7. Non programmable calculator is permitted.

1. a) "Energy consumption pattern of any nation leads to National Energy Efficiency Programme", Justify the statement. **7**

b) What are the salient features of CDM and how it works in energy environment sustainability? **7**

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

b) Discuss the energy scenario in India & factors favoring and against renewable energy sources. **7**

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

b) Write a brief on OFF and grid connected WEG system. Differentiate them with the special references to technology and Applications. **8**

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

b) A WEG generates 1500 watts at rated speed of 24 kmph at atmospheric pressure and temperature of 20ºC. Calculate the change in output if the wind generator is operated at an altitude of 1800 m, temperature 10ºC, wind speed 30 kmph and air pressure 0.88 atmosphere. **7**

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

b) Draw & explain a schematic diagram of Geothermal Energy Generation system. **7**

6. a) What are the different types of energy storage systems use in Non-Conventional energy system? **7**

b) Explain rural – win – diesel hybrid system. **7**

7. a) The basin area of a tidal power plant is $20 \times 10^6 \, m^2$. The tidal range is 8 m, calculate the energy generated in kwh. **7**

b) Differentiate between Grid connected and standalone system. **7**

8. a) What is grid interactive inverter? Explain its significance. **7**

b) Write short notes on: **7**

"Prospects of Biomass energy in context to India".

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