

M. Tech. Electrical Power System (CBCS Pattern) Semester-II  
**PEPS23 - Renewable Energy System**

P. Pages : 1

Time : Three Hours



**GUG/S/25/11023**

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. Illustrate your answers wherever necessary with the help of neat sketches.
  5. Use of slide rule, Logarithmic tables, Steam tables, Mollier's chart, Drawing instruments, Thermodynamic tables for moist air, Psychrometric charts and Refrigeration charts is permitted.
  6. Attempt **any five** questions.
  7. Non-programmable calculator is permitted.

- |    |                                                                                                                     |    |
|----|---------------------------------------------------------------------------------------------------------------------|----|
| 1. | a) Write a short note on –                                                                                          | 7  |
|    | i) Conventional and non-conventional energy resources.                                                              |    |
|    | ii) Kyoto protocol.                                                                                                 |    |
|    | b) What do you understand by energy security and why its analysis required?                                         | 7  |
| 2. | a) Discuss the national renewable energy policy for different energy sources.                                       | 7  |
|    | b) Discuss the energy scenario in India & factors favoring and against renewable energy sources.                    | 7  |
| 3. | a) What is the effect of partial and complete shadowing of a cell in a module.                                      | 5  |
|    | b) Describe the principle of solar photovoltaic energy conversion.                                                  | 5  |
|    | c) Draw and explain an equivalent circuit of a solar PV cell.                                                       | 4  |
| 4. | a) Write a short note on lift and drag type mechanism?                                                              | 7  |
|    | b) What is MPPT in wind energy generation?                                                                          | 7  |
| 5. | a) What is the environmental impact of geothermal energy?                                                           | 7  |
|    | b) Explain in brief SOC and DOD concept of various types of batteries.                                              | 7  |
| 6. | a) State the main application of flywheel energy storage.                                                           | 7  |
|    | b) Explain rural – win – diesel hybrid system.                                                                      | 7  |
| 7. | Enlighten the need and advantages of hybrid renewable energy system. Explain operation of solar-wind-hydro schemes. | 14 |
| 8. | a) Write a short note on standalone system and its application in various industries.                               | 7  |
|    | b) Write short notes on:<br>“Prospects of Biomass energy in context to India”.                                      | 7  |

\*\*\*\*\*