

GUJARAT TECHNOLOGICAL UNIVERSITY

DI – 5 SEMESTER – OLD PAPER – W23 TO S25 – QUESTION BANK(English)

Subject Name & Code:

Renewable and Green Energy- 4351907

Unit 1: Energy and Environment Scenario

Repeated Questions:

1. **Differentiate between Conventional and Non-Conventional Energy Sources.**
 - Appeared in: S24 (Q1b, 04 marks), WIN 24 (Q1a, 03 marks)
2. **State the adverse effects of the use of fossil fuels on the global environment.**
 - Appeared in: S24 (Q1c OR, 07 marks), WIN 23 (Q4b OR, 04 marks)

Other Important Questions:

3. **Write six advantages of Renewable Energy Sources.** (S24 - Q1a, 03 marks)
4. **Classify the Energy Sources and explain any one in brief.** (WIN 23 - Q1a, 03 marks)
5. **Differentiate between of Renewable Energy sources & Non-renewable Energy Sources.** (WIN 23 - Q1b, 04 marks)
6. **Explain the need of renewable energy sources and give three advantages and disadvantages of renewable energy sources.** (WIN 23 - Q1c OR, 07 marks)
7. **State the Different Energy Sources and limitation of Renewable Energy Sources.** (S25 - Q1a, 03 marks)
8. **Explain the need, advantages and present energy scenario of renewable sources.** (S25 - Q1b, 04 marks)
9. **Explain the effects of energy use on the environment and identify the effects that harm the environment and explain why they can be reduced.** (WIN 24 - Q1b, 04 marks)
10. **Define: - Energy Plant and classify the Energy Plant.** (S24 - Q4b, 04 marks)
11. **State the need to reduce the adverse effects of fossil fuels.** (S24 - Q1c OR, 07 marks)

Unit 2: Solar Energy Technology

Repeated Questions:

1. **Explain the construction and working principle of box type solar cooker with neat sketch.**
 - Appeared in: S24 (Q2b, 04 marks), WIN 23 (Q2b, 04 marks)
2. **Give at least six applications (uses) of Solar Energy with different Solar technologies.**
 - Appeared in: S24 (Q2a OR, 03 marks), WIN 23 (Q2a OR, 03 marks)
3. **Define: - Solar Photo-voltaic effect and explain working principle & working of Solar Photo-voltaic system with neat sketch.**
 - Appeared in: S24 (Q2c OR, 07 marks), WIN 23 (Q2c OR, 07 marks)
4. **Explain the working principle of Flat plate collector.**
 - Appeared in: S25 (Q1c OR, 07 marks), WIN 23 (Q1c, 07 marks as FPC)
5. **State the types of solar cell / solar radiation and give information about any one.**
 - Appeared in: S24 (Q2b OR, 04 marks), WIN 23 (Q2b OR, 04 marks)

Other Important Questions:

6. **Write classification of solar energy storage system and explain solar energy thermal storage system in detail.** (WIN 24 - Q1c, 07 marks)
7. **Write an extended note with diagram of solar cooking system.** (WIN 24 - Q1c OR, 07 marks)
8. **Explain solar pond with diagram.** (WIN 24 - Q2a, 03 marks)
9. **Write a short note on solar constant.** (WIN 24 - Q2b, 04 marks)
10. **Write the application, advantages and disadvantages of solar photo voltaic system.** (WIN 24 - Q2c, 07 marks)
11. **Explain solar space heating with diagram.** (WIN 24 - Q2a OR, 03 marks)
12. **Define the following terms. (1) Altitude angle (2) Day length (3) Incident angle (4) Zenith angle.** (WIN 24 - Q2b OR, 04 marks)
13. **Write the domestic and industrial application of solar energy.** (WIN 24 - Q2c OR, 07 marks)
14. **Write the advantages and disadvantages of solar flat plate collector.** (WIN 24 - Q3a, 03 marks)
15. **Write the advantages and disadvantages of solar concentrating collector.** (WIN 24 - Q3a OR, 03 marks)
16. **Give the types of Solar Concentrators and explain any one with neat sketch.** (S24 - Q2a, 03 marks)
17. **What is Solar radiation and explain working principle and main parts of Sun shine recorder with neat sketch.** (S24 - Q2c, 07 marks)
18. **Classify the Solar Thermal Collectors. (at least five classification).** (WIN 23 - Q2a, 03 marks)
19. **Explain working principle and main parts of solar water heating system (SWH) with neat sketch and write four uses of solar water heating system.** (WIN 23 - Q2c, 07 marks)
20. **Explain the working principle of solar PV cell.** (S25 - Q2a, 03 marks)
21. **Advantages and disadvantages of solar photovoltaic System.** (S25 - Q2b, 04 marks)
22. **Explain principle and working of Solar Water Pumping with neat sketch.** (S25 - Q2c, 07 marks)
23. **State the main component of Flat Plate collector.** (S25 - Q2a OR, 03 marks)
24. **State the main component of solar PV System.** (S25 - Q2b OR, 04 marks)
25. **Explain following types of solar cell in details. I) Monocrystalline Cell II) Polycrystalline Cell III) Thin film Cell.** (S25 - Q2c OR, 07 marks)

26. **Explain the Installation, operation & maintenance in Solar System.** (S25 - Q3a, 03 marks)
27. **Explain solar pond in details.** (S25 - Q3a OR, 03 marks)
28. **Explain the following terminology (I) Solar Spectrum (II) Solar Irradiance (III) Solar Constant.** (S25 - Q1c, 07 marks)

Unit 3: Wind Energy Technology

Repeated Questions:

1. **Define: 1. Cut in wind speed 2. Cut out wind speed 3. Swept area 4. Efficiency of wind turbine.**
 - **Appeared in:** S24 (Q3b, 04 marks), WIN 23 (Q3b, 04 marks)
2. **What factors can be considered for site selection of wind mill? (Give at least seven factors)**
 - **Appeared in:** S24 (Q4c, 07 marks), WIN 23 (Q4c, 07 marks)
3. **Differentiate between Horizontal Axis Wind Turbine (HAWT) and Vertical Axis Wind Turbine (VAWT).**
 - **Appeared in:** S24 (Q3c OR, 07 marks), WIN 23 (Q4a, 03 marks), S25 (Q3c OR, 07 marks)
4. **Calculate: - Wind Power for following data. (Numerical)**
 - **Appeared in:** S24 (Q3c, 07 marks), WIN 23 (Q3c, 07 marks)

Other Important Questions:

5. **Explain the main parts Wind turbine with neat sketch.** (S24 - Q3a, 03 marks)
6. **Explain working principle and working of solar drier with neat sketch.** (S24 - Q3a OR, 03 marks)
7. **Explain the working principle and main elements of Vertical Axis Wind Turbine (VAWT) with neat sketch.** (S24 - Q3b OR, 04 marks)
8. **State three advantages and three disadvantages of wind energy.** (S24 - Q4a, 03 marks)
9. **Explain the various components used for wind energy conversion.** (WIN 24 - Q3b, 04 marks)
10. **Discuss in detail the various important points to be considered for site selection of wind energy power plants.** (WIN 24 - Q3c, 07 marks)
11. **Write the application, advantages and disadvantages of wind energy.** (WIN 24 - Q3b OR, 04 marks)
12. **Write classification of wind energy conversion system and explain any one with diagram.** (WIN 24 - Q3c OR, 07 marks)
13. **Explain savonius rotor with diagram.** (WIN 24 - Q4a, 03 marks)
14. **Define the following terms. (1) Wind Speed (2) Wind Power (3) Turbine Power.** (WIN 24 - Q4a OR, 03 marks)
15. **Classify the Wind turbines. (at least six classification).** (WIN 23 - Q3a, 03 marks)
16. **Explain working principle and working of solar pond with neat sketch.** (WIN 23 - Q3a OR, 03 marks)
17. **Explain the working principle and main elements of Horizontal Axis Wind Turbine (HAWT) with neat sketch and give two applications of HAWT.** (WIN 23 - Q3b OR, 04 marks)
18. **State four advantages and disadvantages of wind energy and give at least three uses of wind energy with different technologies.** (WIN 23 - Q3c OR, 07 marks)
19. **Explain Potential of Wind Energy in India.** (S25 - Q3b, 04 marks)
20. **Explain in details Wind Turbine Generator.** (S25 - Q3c, 07 marks)
21. **Factors to be consider before the selection of site for wind turbine installation.** (S25 - Q3b OR, 04 marks)
22. **Explain in detail Darrieus wind turbine with proper sketch.** (S25 - Q4a, 03 marks)
23. **Explain Anemometer in details with proper sketch.** (S25 - Q4a OR, 03 marks)

Unit 4: Bio Energy Technologies

Repeated Questions:

1. **What is biomass?**
 - **Appeared in:** S24 (Q4a OR, 03 marks), S25 (Q4b OR, 04 marks)
2. **Explain working of biogas plant and main parts with diagram and state four uses of biogas.**
 - **Appeared in:** S24 (Q4c OR, 07 marks), WIN 23 (Q4c OR, 07 marks)

Other Important Questions:

3. **State four advantages and disadvantages of biomass.** (WIN 23 - Q4b, 04 marks)
4. **State three sources of biomass procurement.** (WIN 23 - Q4a OR, 03 marks)
5. **State four characteristics of biomass.** (S24 - Q4a OR, 03 marks)
6. **Classify the Biogas plant. (at least four classification).** (S24 - Q4b OR, 04 marks)
7. **Write and explain the factors affecting the formation of biogas.** (WIN 24 - Q4c, 07 marks)
8. **Explain continuous type biogas plant with diagram.** (WIN 24 - Q4c OR, 07 marks)
9. **Write a short note on bio diesel.** (WIN 24 - Q5a, 03 marks)
10. **Write a short note on bio coal.** (WIN 24 - Q5a OR, 03 marks)
11. **Factor affecting bio gas generation, advantages and limitation.** (S25 - Q4b, 04 marks)
12. **State the two method of biomass Conversion process and explain one process from both methods.** (S25 - Q4c, 07 marks)
13. **Explain Fixed Dome type Bio gas plant in details with suitable sketch.** (S25 - Q4c OR, 07 marks)

Unit 5: Green Energy Technology

Repeated Questions:

1. **State six uses of geothermal energy.**
 - Appeared in: S24 (Q5a OR, 03 marks), WIN 23 (Q5a, 03 marks)
2. **Briefly explain the three main sources of ocean energy.**
 - Appeared in: S24 (Q5a, 03 marks), WIN 23 (Q5b OR, 04 marks)
3. **Explain the working principle and working of Open cycle Ocean Thermal Energy Conversion system (OTEC) with neat sketch.**
 - Appeared in: WIN 23 (Q5c, 07 marks), S25 (Q5c, 07 marks)
4. **Explain the working principle and working of Closed cycle Ocean Thermal Energy Conversion system (OTEC) with neat sketch.**
 - Appeared in: S24 (Q5c, 07 marks), S25 (Q5c OR, 07 marks)

Other Important Questions:

5. **Explain different components of tidal power plant with neat sketch.** (S24 - Q5b, 04 marks)
6. **Explain the working principle and working of Fuel cell with neat sketch.** (S24 - Q5b OR, 04 marks)
7. **Explain the working principle and working of Magneto Hydro Dynamic (MHD) with neat sketch and state its two advantages and two disadvantages.** (S24 - Q5c OR, 07 marks)
8. **Write a short note on tidal energy with help of diagram.** (WIN 24 - Q5b, 04 marks)
9. **Write concept and working principal of MHD power generation.** (WIN 24 - Q5c, 07 marks)
10. **Write an energy resource of Geo thermal energy and write its applications.** (WIN 24 - Q5b OR, 04 marks)
11. **Explain vapor dominated system with diagram.** (WIN 24 - Q5c OR, 07 marks)
12. **Explain working principle and working of Single Basin Abb Power Plant with neat sketch.** (WIN 23 - Q5b, 04 marks)
13. **State the advantages and disadvantages of tidal power plant.** (WIN 23 - Q5a OR, 03 marks)
14. **Write the type of fuel cell in briefly and state its two advantages and two disadvantages.** (WIN 23 - Q5c OR, 07 marks)
15. **Explain Geothermal energy and state use of it.** (S25 - Q5a, 03 marks)
16. **Explain Tidal Energy and working principle and working of Double Basin Abb Power Plant with neat sketch.** (S25 - Q5b, 04 marks)
17. **How does the fuel cell technology works and state its future prospects.** (S25 - Q5a OR, 03 marks)
18. **Explain working principle of Magnetohydrodynamic generator (MHD).** (S25 - Q5b OR, 04 marks)
19. **Write a short note on ocean thermal energy with diagram.** (WIN 24 - Q4b OR, 04 marks)
20. **Write a short note on fuel cell technology.** (WIN 24 - Q4b, 04 marks)
