**HARTH INSTITUTE OF ENGINEERING & TECHNOLOGY :: PUTTUR**
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**QUESTION BANK (DESCRIPTIVE)**

**Subject with Code :** Design of Solar and Wind Systems(18ME3120)**Course & Branch**: M. Tech -TE

**Year & Sem:** II-M. Tech & I-Sem **Regulation:** R18

## UNIT –I

| | | | |
|---|---|---|---|
| 1 | | Explain in detail about conventional sources of energy. | 12M |
| 2 | | What are the alternate sources of energy? Explain any three in detail. | 12M |
| 3 | | Define solar radiation. Explain the process of capturing solar radiation. | 12M |
| 4 | | Explain with neat sketches different types of concentrating type collectors. | 12M |
| 5 | a | Mention the applications of non-concentrating type collectors. | 6M |
| | b | List out the applications of concentrating type collectors. | 6M |
| 6 | | How to estimate solar radiation? | 12M |
| 7 | | Describe solar pond with neat sketch. | 12M |
| 8 | a | What are the advantages of non conventional energy sources? | 6M |
| | b | What are the limitations of conventional energy sources? | 6M |
| 9 | | What are the various methods to store solar energy? Discuss in detail any two processes. | 12M |
| 10 | a | Express the estimation process of solar radiation. | 6M |
| | b | Illustrate on direct and indirect utilization of solar energy. | 6M |

## UNIT –II

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| 1 | | What is the potential of Nuclear Power as an Energy Resource? | 12M |
| 2 | | Ellucidate the International Nuclear Policies and Regulations. | 12M |
| 3 | | Mention the different types of Nuclear energy technologies? Explain | 12M |
| 4 | | Summarize notes on Nuclear power plants in India. | 12M |
| 5 | | What is Nuclear fission and write the differences between Nuclear fusion and fission? | 12M |
| 6 | a | What are the advantages of nuclear energy? | 6M |
| | b | List all the disadvantages of nuclear energy? | 6M |
| 7 | | Describe the components of a nuclear reactor? | 12M |
| 8 | a | With neat sketch explain about Advanced Gas Cooled reactor? | 6M |
| | b | Describe Fast Breeder reactor with a line diagram? | 6M |

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| 9 | | Discuss in detail about Nuclear fusion and its applications | 12M |
| 10 | | Define Nuclear Waste and Why its proper disposal is so important? | 12M |

**UNIT –III**

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| 1 | | Elucidate the wind energy characteristics. | 12M |
| 2 | | Elaborate the factors of a site selection for installing wind turbines. | 12M |
| 3 | | Classify wind energy conversion systems and explain. | 12M |
| 4 | a | What is Betz Model? | 6M |
| | b | What are the applications of wind energy? | 6M |
| 5 | | Mention the advantages and disadvantages of wind energy? | 12M |
| 6 | | Explain the availability of Geothermal energy and its sources in India? | 12M |
| 7 | a | What is Geothermal energy? Where it is found? | 6M |
| | b | Enumerate the characteristics of Geothermal energy? | 6M |
| 8 | a | Discuss on Geothermal applications. | 6M |
| | b | Summarize about the economics of Geothermal energy. | 6M |
| 9 | | Describe the processes of power generation from Geothermal heat. | 12M |
| 10 | | Explain about the sustainability of Geothermal Sources and also status of Geothermal Technology. | 12M |

**UNIT –IV**

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| 1 | | Explain about hydrogen and its energy? | 12M |
| 2 | a | How Hydrogen can be a renewable source of energy? | 5 M |
| | b | Mention the applications of hydrogen? | 5 M |
| 3 | | Elaborate the production process of hydrogen by direct electrolysis of water | 12M |
| 4 | | Discuss any two biological methods of hydrogen production. | 12M |
| 5 | a | How hydrogen can be a fuel for vehicles? | 6M |
| | b | Illustrate the sources of production of hydrogen. | 6M |
| 6 | a | What are the different methods of hydrogen production? | 6M |
| | b | Summarize notes on hydrogen fuel for vehicles. | 6M |
| 7 | | Describe any two biological methods of hydrogen production. | 12M |
| 8 | | With a neat sketch explain Photo-electrochemical hydrogen production. | 12M |
| 9 | | Explain in detail about hydrogen storage methods. | 12M |
| 10 | | Elucidate the process of thermal decomposition of water. | 12M |

## UNIT –V

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| 1 | | What is meant by Direct energy conversion? What are the principles of Direct energy conversion? | 12M |
| 2 | a | What is a Fuel cell and write about its construction? | 6M |
| | b | Mention the advantages and disadvantages of fuel cell. | 6M |
| 3 | | List all the advantages and disadvantages of hydrogen fuel cell. | 12M |
| 4 | | Describe the construction and working of thermo electric generator with a neat sketch. | 12M |
| 5 | a | Summarize notes on hydrogen fuel cell. | 6M |
| | b | What is Thermo electric effect? Write the principle of thermo electric generator. | 6M |
| 6 | | Explain about Magneto Hydrodynamic Generator. | 12M |
| 7 | a | Illustrate an Open Cycle MHD System. | 6M |
| | b | Describe the Closed Cycle MHD System. | 6M |
| 8 | | Write about photovoltaic cell and its advantages. | 12M |
| 9 | | Elucidate the general photovoltaic system with sketch. | 12M |
| 10 | | Outline all the photovoltaic solar applications. | 12M |

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