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VIGNAN'S Institute of Information Technology (Autonomous)**VR17**

Subject Code: 1003174113

**IV B. Tech I Semester Regular and Supplementary Examinations, DEC-2021
GREEN ENGINEERING SYSTEMS
(ME)**

Time: 3 hours

Max. Marks: 60

**Answer All Questions
All Questions carry EQUAL marks****[5*12=60]**

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|---|----|----|--|------|
| 1 | A) | i | Discuss how does solar power affect the environment? Write any 4 demerits. | [6M] |
| | | ii | What is the solar constant and why is it not constant? | [6M] |
| | | | Or | |
| | B) | i | Classify types of solar thermal collectors? Explain any two in detail. | [6M] |
| | | ii | What are the advantage and disadvantages of concentrating collectors over a flat plate collector? | [6M] |
| 2 | A) | i | What is latent and sensible heat storage? | [6M] |
| | | ii | Explain the main working principle of a solar pond? | [6M] |
| | | | Or | |
| | B) | i | What are the performance characteristics of wind power plants? | [6M] |
| | | ii | Distinguish between horizontal axis and vertical axis wind turbines. | [6M] |
| 3 | A) | i | What do you mean by anaerobic digestion and aerobic digestion? Is anaerobic digestion better than aerobic digestion? | [6M] |
| | | ii | Define biogas. Explain the construction and working of a biogas plant with the help of a labeled diagram write any two uses of biogas? | [6M] |
| | | | Or | |
| | B) | i | How many types of OTEC plants are there? Explain the principle of operation of OTEC plants? | [6M] |
| | | ii | Classify hydropower plants? What are the major components of mini hydro power plant? | [6M] |
| 4 | A) | i | What happens in a variable voltage variable frequency drive which is used to control the speed of an induction motor? | [6M] |
| | | ii | Discuss the relevance of energy efficient technologies in HVAC systems. | [6M] |
| | | | Or | |
| | B) | i | What is the principle of fuel cell? Discuss problems associated with operation of fuel cell. | [6M] |
| | | ii | What are the energy conservation opportunities in a compressor system? Are air compressors energy efficient? | [6M] |
| 5 | A) | i | Discuss about environment friendly machining. | [6M] |
| | | ii | Write the benefits of green manufacturing systems. | [6M] |
| | | | Or | |
| | B) | i | Discuss about Environmental friendly building materials. What are the advantages in using them? | [6M] |
| | | ii | What are the methods implemented to reduce heat gain of the buildings. | [6M] |



VIGNAN'S Institute of Information Technology (Autonomous)

Subject Code: 1003194251

VR19

IV B. Tech II Semester Regular Examinations, APRIL - 2023

Green Engineering Systems

(CE and ME)

Time: 3 hours

Max. Marks: 70

Answer All Questions

All Questions carry EQUAL marks

[5*14=70]

- 1 A) i Define solar Constant, Extra Terrestrial Radiation, Angle of Incidence, Longitude, Latitude and Declination angle. [7M]
ii Define Solar Time, Hour Angle, Surface Azimuthal Angle, Zenith Angle, Sun Set Hour angle and No. of Shiny days in a Year. [7M]
Or
B) i Define PV Cell, PV Module, PV Panel, PV Array and explain the V-I Characteristics of PV cell. [7M]
ii Illustrate flat plate collector. [7M]
- 2 A) i Explain about Solar Cookers. [7M]
ii Explain the Central Power Station. [7M]
Or
B) i Explain the working of horizontal axis wind mill in detail. [10M]
ii Derive the expression of power available in the wind and Betz limit. [4M]
- 3 A) i Enumerate the differences between aerobic and anaerobic digestion. [7M]
ii Explain in detail various methods of extracting geothermal energy. [7M]
Or
B) i With a neat labeled sketch explain the working of OTEC system [7M]
ii With a neat labeled sketch explain mini-hydel power plants [7M]
- 4 A) i Write a short note on energy efficient lighting and control. [7M]
ii Explain the need for energy efficient motors in various applications. [7M]
Or
B) i Discuss the working of fuel cell with a neat sketch. [7M]
ii Explain briefly the working principle of any one type of energy efficient compressor. [7M]
- 5 A) i List the factors which involve in the selection of environmentally friendly materials in manufacturing. [7M]
ii Write short notes on alternate casting and joining techniques. [7M]
Or
B) i Discuss about green building and state its advantages and disadvantages. [7M]
ii Write short notes on lime pozzolana cement. Discuss about green building materials like bamboo, timber, rammed earth, hollow blocks and agro materials. [7M]