

Code No: RT42032

R13

Set No. 1

IV B.Tech II Semester Regular Examinations, April/May - 2017

GREEN ENGINEERING SYSTEMS

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

PART-A (22 Marks)

1. a) Give the advantages and disadvantages of solar collectors. [4]
- b) Give the schematic diagram of solar water heater. [3]
- c) Give classification of geothermal energy resources. [4]
- d) Explain about selection of fuel cells. [4]
- e) Discuss about vegetable based cutting fluids? [4]
- f) What are green buildings? List the advantages. [3]

PART-B (3x16 = 48 Marks)

2. a) Explain any two instruments used for measuring solar radiation with neat sketches. [8]
- b) Give the significance of solar energy. [8]
3. a) What is a solar pond? Explain the zonation of solar pond with neat sketch. [8]
- b) How are wind energy systems classified? Explain. [8]
4. a) Explain the three basic kinds of geo thermal resources. [8]
- b) Explain the different applications of geo thermal energy in India. [8]
5. a) What are the requirements of energy efficient motors? Discuss briefly. [8]
- b) Explain why variable torque loads offer greater energy savings? [8]
6. a) Explain the major benefits of green manufacturing systems. [8]
- b) List the advantages and disadvantages of green manufacturing. [8]
7. a) List the construction material used in green buildings and explain briefly. [8]
- b) Explain the various components of a green building. [8]



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Set No. 2

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GREEN ENGINEERING SYSTEMS

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

PART-A (22 Marks)

1. a) Define solar constant and give its units. [4]
- b) What is basic principle of wind energy conversion? [4]
- c) Differentiate between Biomass and Bio Gas [3]
- d) What are energy efficient systems .Give examples [4]
- e) Give environmental impact of current systems over green manufacturing systems. [3]
- f) Explain the role of bamboo and timber in environmental friendly systems. [4]

PART-B (3x16 = 48 Marks)

2. a) What are the advantages and disadvantages of concentrating collectors over the flat plate collectors? [8]
- b) Enumerate the different types of concentrating type collectors. [8]
3. a) Classify the methods of solar energy storage. [8]
- b) Explain the working of OTEC plant with the help of neat schematic layout? [8]
4. a) How are Bio mass plants classified? Explain them briefly. [8]
- b) Discuss about the modifications required to IC engine for using bio fuels? [8]
5. a) Explain the energy efficient lightning control methods. [8]
- b) Explain why centrifugal machines offers the greatest savings when used with Variable Speed Drives. [8]
6. a) Explain the classification of fuel cells based on type of electrolyte. [8]
- b) Explain the role of environmental sustainable company in energy management. [8]
7. a) What are the measure for energy saving in a green building? Explain. [8]
- b) Explain the significance of solar power in green buildings. [8]



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Set No. 3

IV B.Tech II Semester Regular Examinations, April/May - 2017

GREEN ENGINEERING SYSTEMS

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

PART-A (22 Marks)

1. a) What are the components of flat plate solar collectors and indicate the [4] components with neat sketch?
- b) Give the advantages and disadvantages of wind energy conversion system. [4]
- c) List the factors which effect the size of bio mass plant. [4]
- d) What are the precautions to be taken in the case of energy efficient motor application? [4]
- e) List some environmental friendly material used in manufacturing [3]
- f) Name the different environment materials used in green buildings. [3]

PART-B (3x16 = 48 Marks)

2. a) Explain the principle of conversion of solar energy into heat. [8]
- b) How are solar air collectors classified? What are the main applications of a solar drier? [8]
3. a) Describe different energy storage methods used in solar system. [8]
- b) Describe briefly the working of a solar pond? Write its applications? [8]
4. a) What are the advantages and limitations of wave energy conversion? [8]
- b) What are the difficulties in tidal power plant development? [8]
5. a) Explain the role of selection of fuels in environmental friendly environment. [8]
- b) Discuss about variable voltage variable frequency drives? [8]
6. a) What is zero waste manufacturing? Explain. [8]
- b) List the benefits of green manufacturing systems over current systems. [8]
7. a) Explain the various waste management principles used in green buildings. [8]
- b) Explain the role of building site planning in green house. [8]



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Set No. 4

IV B.Tech II Semester Regular Examinations, April/May - 2017

GREEN ENGINEERING SYSTEMS

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

PART-A (22 Marks)

1. a) Explain the necessity of orientation in concentrating spring collectors. [4]
- b) Discuss about sensible heat storage method? [4]
- c) What are the advantages of small scale hydro electric power generation? [3]
- d) Give features of adjustable drives used in energy efficient systems. [4]
- e) Explain principle involved in a fuel cell. [3]
- f) List the benefits of green manufacturing systems. [4]

PART-B (3x16 = 48 Marks)

2. a) Explain the working of Pyrheliometer and Pyranometer. [8]
- b) Explain the working of simple horizontal axis wind mill? Write its advantages and disadvantages? [8]
3. a) Explain how stable density gradient is maintained in a solar pond. [8]
- b) Explain the working central power tower and solar chimney? [8]
4. a) Give classification of geothermal wells. [8]
- b) Explain the principle involved in conversion of ocean energy. [8]
5. a) Give various efficient control methods used for heating, ventilation and air conditioning. [8]
- b) What is the role of energy efficient compressors and pumps in energy efficient systems? [8]
6. a) List the factors which involve in selection of recyclable and environment friendly materials in manufacturing. [8]
- b) Explain how alternate casting and joining techniques improve efficiency. [8]
7. a) What are the requirements of green building for maximum comfort. [8]
- b) Ferro cement and Ferro-concrete, alternate roofing systems are alternate sources for green buildings .Explain [8]

