

Code No: RT42032

R13

Set No. 1

IV B.Tech II Semester Supplementary Examinations, July/August - 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 about extraterrestrial and terrestrial solar radiation [4]
- b) Discuss about solar drying. [3]
- c) Explain the principle of bio conversion. [4]
- d) Discuss about adjustable speed drives. [4]
- e) What are the benefits of green manufacturing? [4]
- f) Explain about alternate roofing system. [3]

PART-B (3x16 = 48 Marks)

2. a) Discuss about the role and potential of new and renewable sources of energy [8]
- b) Explain the working of Flat plate collector with the help of a neat sketch. [8]
3. a) Explain the working of central power tower and solar chimney. [8]
- b) Derive the expression to calculate the maximum power that can be generated by using horizontal wind machine (Betz criteria). [8]
4. a) Explain the working of vapour dominant hydro thermal convection system. [8]
- b) Estimate the energy and power in simple single basin tidal system and also explain the working of any one tidal power generation system [8]
5. a) Discuss about energy efficient lighting and control. [8]
- b) Discuss about energy efficient compressors and pumps. [8]
6. a) Discuss about the environmental impact of current manufacturing systems. [8]
- b) Explain the concept of zero waste manufacturing. What are the challenges in implementing this concept? [8]
7. a) Discuss about effective energy management. [8]
- b) Discuss about Environmental friendly building materials. [8]