10 ME 32E SOLAR ENERGY ENGINEERING

III B.Tech II Semester

(with effect from the academic year 2012-2013)

Credits: 4

Lectures/week: 4 Hrs. *Sessional Marks:40*

University Exam:3 Hrs *End Examination Marks: 60*

UNIT-I

The phases of the Sun and its energy transport – Solar radiation geometry – Calculation of radiation intercepted by surfaces – Instruments for measuring Solar radiation – Solar radiation data.

UNIT-II

Flat Plate Collectors. Energy balance equation – Thermal analysis of flat plate collectors – Transmission of cover system – Heat transport systems – Collector efficiency – Materials.

UNIT-III

Concentrating Collectors: reasons for using concentrating collectors – types of concentrating collectors – Performance analysis of cylindrical parabolic concentrating collector – Advantages and disadvantages of concentrating collectors over flat plate type collectors.

UNIT-IV

Solar energy storage : Thermal – Electrochemical-Solar Pond- Materials for phase change energy storage.

UNIT-V

Solar Energy Applications: Water heating- Space heating -Space cooling- Solar pumping – Solar furnace –Solar distalation- Solar cooking-Solar green houses- Solar production of hydrogen.

TEXT BOOKS:

1. Solar Energy Utillization :G.D. Rai
2. Principles of Solar Engineering :Kreith &Kreider

REFERENCES:

1. Solar Energy Thermal Process :Dufice&Beckman
2. Solar Energy and Non conventional Energy Sources : Domakundwar