# M. TECH.-III (ELECTRICAL -POWER SYSTEM) (CBCS – 2015 COURSE) : WINTER - 2017

## SUBJECT: SELF- STUDY PAPER – I ENERGY CONSERVATIONS AND AUDIT

Day: **Thursday**　　　　　　　　　　　　　　　　　Time: **11.00 AM TO 02.00 PM**
Date: **25/01/2018**　　　　　**W-2017-2954**　　　　Max Marks: 60

**N.B.:**
1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Answers to both the sections should be written in **SEPARATE** answer book.
4) Assume suitable data if necessary.

## SECTION-I

**Q.1** What is energy audit? Discuss various steps involved in energy audit. **(10)**

**OR**

Write in detail the format and contents of an audit report and various **(10)** stakeholders of audit report.

**Q.2** Explain: **(10)**
　　a) Specific energy consumption
　　b) Benchmarking
　　c) Sankey diagram

**OR**

Explain the various data analysis methods used in energy audit. **(10)**

**Q.3** In energy audit studies of cement industry, it is suggested to implement a new **(10)** conservation scheme. With following details:

| | |
|---|---|
| Cost of installation | Rs. 10 lakh |
| Annual of operating cost | Rs. 40,000 |
| Annual fuel savings | 45,000 million KJ |
| Fuel price | Rs. 22/ million KJ |

Calculate PP and ROI of the scheme.

**OR**

Elaborate NPV method used for economic analysis and discuss 'Time value of **(10)** money'.

## SECTION-II

**Q.4** Discuss energy conservation opportunities in: **(10)**
　　a) Motive power
　　b) HVAC system

**OR**

Explain topping and bottoming cycle used in co-generation. **(10)**

**Q.5** Discuss procedure fro energy audit of a Cinema Hall and discuss the soft and **(10)** hard recommendations for the same.

**OR**

List the various designated industries. Discuss procedure of energy audit of an **(10)** hospital.

**Q.6** Discuss energy conservation in T and D sector and future trends. **(10)**

**OR**

Explain how to use latest trends of energy conservation can be achieved in **(10)** illumination system.