Code No: **R163202F** **R16** SET - 1

III B. Tech II Semester Regular/Supplementary Examinations, August-2021

ENERGY AUDIT, CONSERVATION AND MANAGEMENT

(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A **(14 Marks)**

1. a) How energy management program is organized in an organization? [2M]
   b) A lamp taking 3.2 A at 110V emits 5000 lumens. Calculate its efficiency in Lumens per watt. [2M]
   c) What for Lux meter is used? [2M]
   d) What is an HVAC System and what does it signify? [3M]
   e) What is Replacement Analysis and explain its significance? [3M]
   f) Explain how watt hour meter can be considered as an Energy Instrument? [2M]

PART –B **(56 Marks)**

2. a) What is Energy Audit and explain its necessity in present scenario? [7M]
   b) Explain the types of Audit generally followed and give a checklist for energy audit in general? [7M]

3. a) Explain the principle of operation of Pyrometer and also explain about the Optical and radiation type Pyrometer. [7M]
   b) What are Polar curves and explain Horizontal polar curve and Vertical polar curve? [7M]

4. a) Explain the effects of low power factor and also explain the different methods of improving the power factor. [7M]
   b) A 400V, 50 Hz, 3-phase supply delivers 200 kW at a power factor of 0.7 lag. It is desired to bring the line power factor to 0.9 by installing shunt capacitors. Calculate the capacitance if they are: i) star connected; ii) Delta connected. [7M]

5. a) Explain space heating methods for radiation and convection. [7M]
   b) What is Electric water heating system? And explain in brief the different types of it. [7M]

6. a) Distinguish between Energy Efficient motors and Normal Standard motors. [7M]
   b) Explain about Life cycle costing analysis. [7M]

7. a) Explain Internal Rate of Return method in detail with respect to Energy Economics. [7M]
   b) Calculate the simple payback and rate of return of a lighting retrofit that will cost Rs. 7500 to implement and will save Rs. 400 per year. [7M]

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