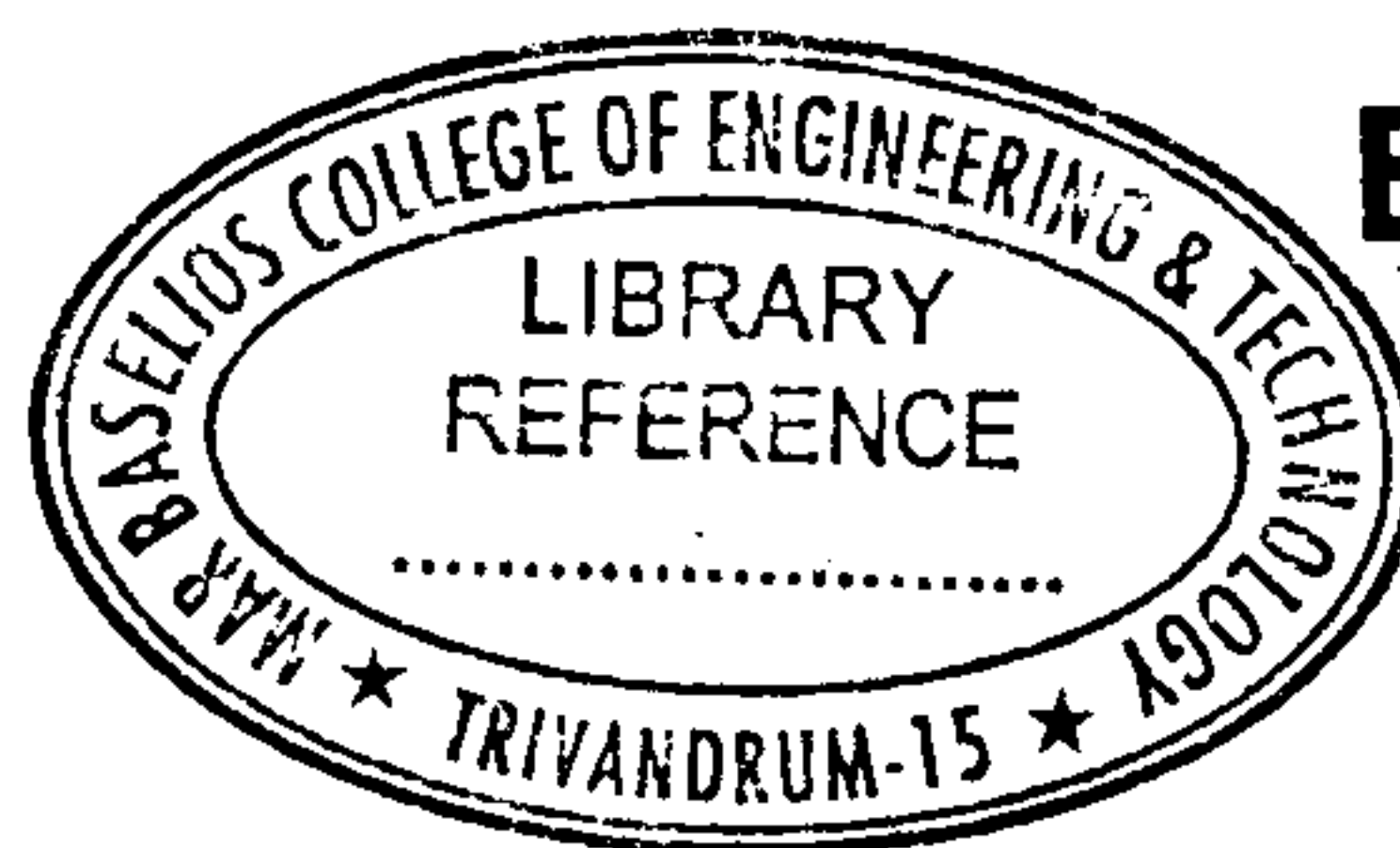




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B – 5566

Reg. No. :

Name :

**Sixth Semester B.Tech. Degree Examination, March 2017
(2008 Scheme)**

Branch : ELECTRICAL AND ELECTRONICS

08.606 : Elective – II (A) : Energy Conservation and Management

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions.

1. Explain the reasons for global warming.
2. Discuss the relation between energy consumption and GDP.
3. Differentiate between preliminary audit and detailed audit.
4. Define coefficient of performance.
5. How an HVAC System works ?
6. A five ton air conditioner has an average electric load of 16 kW. What is its SEER ?
7. Explain cash flow diagram.
8. Discuss briefly on computer based EMCs.
9. Explain internal rate of return.
10. Discuss briefly on cogeneration technologies. **(10×4=40 Marks)**

PART – B

Answer **any one full** question from **each** module.

Module – I

11. a) Explain the desirable objectives of energy management. **10**
- b) Explain a typical organization design for energy management for multidivisional firm. **10**

OR

P.T.O.



12. a) Explain various stages of Energy Audit. 10
- b) Define Energy audit and explain types of audit. Lists the benefits of an industrial energy audit. 10

Module – II

13. a) Explain the purpose of HVAC system and the components involved in HVAC system. 10
- b) Draw the schematic of a dual duct HVAC System. 10

OR

14. a) Explain the energy management opportunities with electrical drives. 10
- b) An ice factory has a 50 hp air compressor that operates at full load, all day for 365 days per year. If the motor for air compressor cost Rs. 20,000/-, the motor efficiency is 90% and the electricity costs Rs. 7.00/kW/month and Rs. 2/kWh, how much does it cost to operate the air compressor for one year? How much money will be spent to operate the air compressor over a ten year period? 10

Module – III

15. a) Draw the cash flow diagram for the heat pump, the costs/benefits associated with it are :
- The heat pump cost Rs. 10,000 initially.
 - The heat pump saves Rs. 2,500 per year for 20 years.
 - The maintenance costs are Rs. 500 per year for 20 years.
 - The estimated salvage value is Rs. 500 at the end of 20 years.
- b) Define present worth, Future worth, and Annual worth. 10

OR

16. a) Explain LCC and Pay Back methods.
- b) An energy efficient air compressor is proposed by a vendor. The compressor will cost Rs. 30,000/- installed and will requires Rs. 1,000 worth of maintenance each year for its life of 10 years. Energy cost will be Rs. 6,000/- per year. A standard air compressor will cost Rs. 25,000/- and will require Rs. 500/- worth of maintenance each year. Its energy cost will be Rs. 10,000/- per year. If your company uses a MARR of 10%, would you invest in the energy efficient air compressor? 20