



## GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

B. Tech Degree Examinations, June – 2021

(Sixth Semester)

**BELPE6010 / BEEPE6010 – ENERGY MANAGEMENT AND AUDITING**

(EE and EEE)

Time: 2 hrs

Maximum: 50 Marks

**Answer ALL Questions****The figures in the right hand margin indicate marks.****PART – A: (Multiple Choice Questions)****(1 x 10 = 10 Marks)****Q.1. Answer ALL questions****[CO#] [PO#]**

- |   |     |      |
|---|-----|------|
| a. Out of the total amount of primary energy, from fossil fuels we get                            | CO1 | PO 1 |
| (i) 75%   |     |      |
| (ii) 85%  |     |      |
| (iii) 95%   |     |      |
| (iv) 100%   |     |      |
| b. One tonne of oil equivalent to   | CO1 | PO 1 |
| (i) 40868 MJ  |     |      |
| (ii) 41868 MJ   |     |      |
| (iii) 42868MJ   |     |      |
| (iv) 43868 MJ   |     |      |
| c. Lignite is an example of   | CO1 | PO 1 |
| (i) primary energy  |     |      |
| (ii) Secondary energy   |     |      |
| (iii) Commercial energy   |     |      |
| (iv) non- commercial energy   |     |      |
| d. Final energy consumption measured in   | CO1 | PO 1 |
| (i) toe   |     |      |
| (ii)Mtoe  |     |      |
| (iii)Ktoe   |     |      |
| (iv)Gtoe  |     |      |
| e. Preliminary energy audit, which is also known as   | CO1 | PO 1 |
| (i) Walk-Through Audit  |     |      |
| (ii) Walk – away Audit  |     |      |
| (iii) run – through Audit   |     |      |
| (iv) Run – away Audit   |     |      |
| f. The most common metric used in benchmarking is   | CO1 | PO 1 |
| (i) energy intensity  |     |      |
| (ii) energy usage   |     |      |
| (iii) energy audit  |     |      |
| (iv) energy conservation  |     |      |
| g. The ratio of production in the current year to that in the reference year is called            | CO1 | PO 1 |
| as  |     |      |
| (i) Bureau of Energy Efficiency   |     |      |
| (ii) Plant energy performance   |     |      |
| (iii) law of conservation of energy   |     |      |
| (iv) Bureau of Indian Standards   |     |      |
| h. Electricity billing  | CO1 | PO 1 |
| (i) varies from State to State  |     |      |
| (ii) Constant for all States  |     |      |
| (iii) Partly varies for few states  |     |      |
| (iv) Partly varies for all states   |     |      |
| i. But for a bulk electricity consumer with a high voltage connection, the meter used is called a | CO1 | PO 1 |
| (i)monovector meter   |     |      |
| (ii)divector meter  |     |      |
| (iii)trivector meter  |     |      |
| (iv)tetravector meter   |     |      |
| j. Maximum demand controller is used to   | CO1 | PO 1 |
| (i) switch off essential loads in a   |     |      |
| (ii) exceed the demand of the plant   |     |      |
| logical sequence  |     |      |
| (iii) switch off non-essential loads in   |     |      |
| (iv) controls the power factor of the   |     |      |
| a logical sequence  |     |      |
| plant   |     |      |

**PART – B: (Short Answer Questions)****(2 x 5 = 10 Marks)****Q.2. Answer ALL questions**

- |   | [CO#] | [PO#] |
|---|-------|-------|
| a. What you mean by Commercial energy?                      | CO1   | PO 1  |
| b. Define Energy security.                                  | CO1   | PO 1  |
| c. What do you mean by energy audit?                        | CO1   | PO 1  |
| d. Give the advantages of electronic soft-starters?         | CO2   | PO 1  |
| e. What are the means of varying speeds of induction motor? | CO1   | PO 1  |

**PART – C: (Long Answer Questions)****(6 x 5 = 30 Marks)****Answer ANY FIVE questions**

- |  | Marks | [CO#] | [PO#] |
|--|-------|-------|-------|
| 3. Discuss in detail about energy scenario.  | (6)   | CO6   | PO 1  |
| 4. Explain in detail about schemes of BEE under the energy conservation act- 2001.   | (6)   | CO2   | PO 1  |
| 5. Why energy audit is needed? Give the types of energy audit and approach.  | (6)   | CO1   | PO 1  |
| 6. A solution with 80% oil, 15% usable by-products and 5 % impurities, enters a refinery. One output is 92% oil and 6% usable by-products. The other output is 60 % oil and flows at the rate of 1000 lit/hr.( Assume no accumulation, percent by volume)<br>What is the flow rate of input?<br>What is the percent composition of the 1000 lit/hr output?<br>What percent of the original impurities are in the 1000 lit/hr output? | (6)   | CO1   | PO 1  |
| 7. How energy pricing is done in India?  | (6)   | CO1   | PO 1  |
| 8. Write in detail about electrical load management and maximum demand control   | (6)   | CO1   | PO 1  |
| 9. Why variable torque loads offer greatest energy savings? Explain electronic methods of speed controllers?   | (6)   | CO1   | PO 1  |
| 10. List any 5 different types of energy efficient retrofits? Explain their application and benefits in 2-3 lines each.  | (6)   | CO1   | PO 1  |

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