


| Name: | |  | |
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| Enrolment No: | | | |
| UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, May 2022 | | | |
| Course: Process Optimization Program: M.Tech – Energy System & Sustainability Course Code: EPEC7014P Instructions: All questions are to be attempted | | Semester : II Time : 03 hrs. Max. Marks: 100 | |
| SECTION A (5Qx4M=20Marks) | | | |
| S. No. | | Marks | CO |
| Q 1 | Describe the advantages / disadvantages of M-E balance diagram | 4 | CO2 |
| Q 2 | Describe the advantages of improving Power Factor | 4 | CO1 |
| Q 3 | Describe the composite curve | 4 | CO3 |
| Q 4 | Describe the cautions for development of M-E balance diagram of batch process | 4 | CO2 |
| Q 5 | Write down the procedure for developing an optimized system using Pinch Technology. | 4 | CO3 |
| SECTION B (4Qx10M= 40 Marks) | | | |
| Q 6 | Compare the various starters of an Induction motor and which one is most efficient? | 10 | CO1 |
| Q 7 | Illustrate the typical losses of a steel re-heating furnace | 10 | CO1 |
| Q 8 | Draw the Energy – material balance diagram of a typical boiler system | 10 | CO2 |
| Q 9 | Describe the key purpose of using Pinch Technology. Also, describe the role of Composite curve for it. | 10 | CO3 |
| SECTION-C (2Qx20M=40 Marks) | | | |
| Q 10 | Elaborate the constraints for energy consumption reduction and optimization in a typical big hospital. | 20 | CO4 |
| Q 11 | Explain the Energy Conservation possibilities in a typical coal based Thermal Power Plant and highlight the other parameters to be optimized in various processes of a TPP. OR Discuss in detail the energy optimization opportunities in a cement plant | 20 | CO5 |