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| **An-Najah National University**  **Engineering College** |  | | **جامعة النجاح الوطنية**  **كلية الهندسة** |
| **Energy Engineering and Environment – make up**  **Energy Conservation and Auditing (1/10656301)** | | | |
|  | | | |
| **Student Name:………………………...** | | **Instructor Name: Dr. Mohammed Alsayed** | |
| **Registration Number:** | | **Academic Year: 2018/2019** | |
| **Total Exam Mark: 40** | | **Semester: second** | |
| **Exam Weight: 20** | | **Credit Hours: 3** | |
|  | | **Date: 02/04/2019** | |
|  | | **Exam Duration: 60 minutes** | |

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| **Question** | **Points** | **ILO’s** | **Question Grade** |
| **Q1** | **20** |  |  |
| **Q2** | **20** |  |  |
| **Student Grade** | | |  |

**Note**: it is an open book exam.

**Q1 (20 point):** Develop a complete plan with suitable goals to implement an energy audit at An-najah National University.

**Q2 (20 point):** For the following HVAC cooling load profile (COP = 3, half a month period basis). If the applied tariff structure is $7.5/kW/month, and energy charge equals to $0.12/kWh. Assume Ratchet (70%) and repeatable load (the same every year). Calculate Ratchet penalty.

