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| **Department of Electrical Engineering**  **Assignment**  **Date: 20/04/2020**  **Course Details** | | | |
| **Course Title:** | Thermodynamics | **Module:** | 02 |
| **Instructor:** | Sir Mujtaba Ihsan | **Total Marks:** | 30 |
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**Student Details**

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| Q1. | (a) | Express the temperature of 139 ₀C on degree Fahrenheit, Rankine and Kelvin scales. | Marks 06 |
| CLO 1 |
| (b) | Derive the equation highlighting the work done by a gas or vapour in expanding for a constant temperature process. | Marks 05 |
| CLO 1 |
| Q2. |  | Analyze the given figure and match column 1 with the correct option of column 2.     |  |  | | --- | --- | | **Column 1** | **Column 2** | | Process I | Adiabatic | | Process II | Isobaric | | Process III | Isochoric | | Process IV | Isothermal | | Marks 08 |
| CLO 1 |
| Q3. | (a) | Hydrogen is compressed under a constant pressure of 5760 lb/ft2 until its volume is reduced from 28 to 12 ft3. Calculate the work done in compressing the gas. | Marks 07 |
| CLO 1 |
| (b) | Differentiate between enthalpy and entropy using examples from daily life. | Marks 04 |
| CLO 1 |

**Ans 1(a):**







**Ans 1(b):**

Work done by a gas or vapours in expending:-

The amount of work done in a gas or vapours in expending defined on the method by which expansion is perform.



**Ans 2:**



**Ans 3(a):**

**Sol:**



**Ans 3 (b):**

Following are the differences between Enthalpy and Entropy:

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| --- | --- |
| **Enthalpy** | **Entropy** |
| Enthalpy is a kind of energy. | Entropy is a property. |
| It is sum of total energy and flow energy. | It is the measurement of randomness of molecules. |
| It is denoted by symbol H | It is denoted by symbol S |
| It is applicable in standard conditions. | It does not have any limits or conditions. |
| Its unit is | Its unit is |

**Example of Enthalpy:**

Ozone, (g), forms from oxygen, (g), by an endothermic process. Ultraviolet radiation is the source of the energy that drives this reaction in the upper atmosphere. Enthalpy also include: enthalpy of combustion, enthalpy of fusion, enthalpy of vaporization.

**Example of Entropy:**

The campfire is a good example of entropy. The solid wood burns and becomes ash, smoke and gases, all of which spread energy outwards. Ice melting, salt sugar dissolving, boiling of water for tea etc.