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| **Department of Electrical Engineering**  **Assignment**  **Date: 21/08/2020**  **Course Details** | | | |
| **Course Title:** | Power Electronics | **Module:** |  |
| **Instructor:** |  | **Total Marks:** | 30 |
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**Student Details**

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| **Name:** |  | **Student ID:** |  |

Note: Plagiarism of more than 20% will result in negative marking.

Similar answers of students will result in cancellation of the answer for all parties.

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| Q1. | 1. What is the purpose of a freewheeling diode?      1. What is the difference between a RC and RL circuit? | CLO 1  Marks 10 |
| Q2. | 1. What are the There are three operating regions of a transistor? Explain in detail.      1. Explain in detail the differences between BJT, MOSFET and IGBT | CLO 1  Marks 10 |
| Q3. | 1. The bipolar transistor in Figure below is specified to have βF in the range of 8 to 40. The load resistance, RC = 11 Ω. The dc supply voltage, VCC = 200 V and the input voltage to the base circuit, VB = 10 V. If VCE(sat) = 1.0 V and VBE(sat) = 1.5 V, find  * the value of RB that results in saturation with an ODF of 5, * the βforced, * the power loss, PT in the transistor.. | CLO 1  Marks 10 |

