

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VIII(NEW) EXAMINATION – SUMMER 2019

Subject Code:2182401

Date:15/05/2019

Subject Name:Power Electronics Applications

Time:10:30 AM TO 01:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Define Power Electronics. Explain advantage and disadvantage of Power Electronics. **03**
- (b) Explain the requirement of Battery Operated Vehicle **04**
- (c) Explain the difference between Brushless DC Motor and Brushed DC Motor used in Electrical Vehicle. **07**
- Q.2** (a) List out the advantages and disadvantages of Variable Speed Drives **03**
- (b) Explain the similarities and differences between Power Electronics and Linear Electronics. **04**
- (c) Define UPS. Draw and explain working, advantages, disadvantage and application of OFF Line UPS. **07**
- OR**
- (c) Define UPS. Draw and explain working, advantages, disadvantage and application of ON Line UPS. **07**
- Q.3** (a) Define Fundamental Power Factor. List and explain one method of Power Factor Correction. **03**
- (b) Explain the use of Power Electronics in Electronic Fan Regulator. **04**
- (c) Draw the block diagram of Electric Motor Drive and explain the function of each component in details. **07**
- OR**
- Q.3** (a) Draw and explain in brief types of HVDC. **03**
- (b) Explain the use of Power Electronics in Induction cooking. **04**
- (c) Define SMPS. Draw and explain working, advantages, disadvantage and application of SMPS. **07**
- Q.4** (a) Explain the operation of SVC. **03**
- (b) Explain the use of Power Electronics in Arc and Industrial furnaces. **04**
- (c) Draw and explain use of Power Electronics in Static Excitation System of Alternator. **07**
- OR**
- Q.4** (a) Explain the operation of TCS. **03**
- (b) Explain use of Power Electronics in Rolling Mills and Textile Mills. **04**
- (c) Draw and explain use of Power Electronics in VAR Compensators. **07**
- Q.5** (a) Explain use of Boost converter for Aircraft Application. **03**
- (b) Define the term IoT. Explain use of IoT in Smart Metering. **04**
- (c) List the different Solar Technologies. Draw and Explain block diagram of Photovoltaic Array Interconnection to Power System. **07**
- OR**
- Q.5** (a) Explain use of Buck Converter for Aircraft Application. **03**
- (b) Define the term IoT. Explain use of IoT in Smart Grid. **04**
- (c) Draw and explain block diagram for Interconnection of Renewable Energy Source to Utility Grid. **07**
