

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2022

Subject Code:3172419**Date:12-01-2023****Subject Name:Smart Grid and Power Electronics****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.
4. Simple and non-programmable scientific calculators are allowed.

	MARKS
Q.1 (a) Define smart grid concept and explain its necessity in brief.	03
(b) List out the application of smart grid.	04
(c) Draw and explain the architecture of Smart Grid.	07
Q.2 (a) Compare today's grid with smart grid.	03
(b) Explain functions of smart grid components.	04
(c) Discuss the role of power electronics in smart grid.	07
OR	
(c) Draw the block diagram of Plug-in-Hybrid Vehicles (PHEV) and explain it in detail.	07
Q.3 (a) Enlist smart grid control layer.	03
(b) Discuss islanding and anti-islanding in power system.	04
(c) Explain smart metering and advantages of it.	07
OR	
Q.3 (a) Explain phase measuring unit.	03
(b) Compare Smart Grid and Microgrid.	04
(c) Compare conventional metering and smart metering.	07
Q.4 (a) Discuss the concept of microgrid. State its applications.	03
(b) Give comparison between AC smart grid and DC smart grid.	04
(c) Explain modeling of DC smart grid with analysis.	07
OR	
Q.4 (a) Define relay co-ordination and discuss need of relay co-ordination.	03
(b) Explain important of smart relays in smart grid.	04
(c) Explain the operation and control of AC Smart Grid.	07
Q.5 (a) Enlist distributed generation resources.	03
(b) Write a short note on: Energy Management.	04
(c) Discuss the technologies used in smart grid.	07
OR	
Q.5 (a) Discuss demand side management of Smart Grid in brief.	03
(b) Discuss the operation and control of Hybrid Smart Grid.	04
(c) Write a short note on: storage devices used in Smart Grid.	07
