

<b>Reg. No.</b>																			
-----------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

<b>Question Paper Code</b>	<b>13940</b>
----------------------------	--------------

**B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2025**

Seventh Semester

**Electrical and Electronics Engineering**

**20EEEL701 - POWER ELECTRONICS FOR RENEWABLE ENERGY SYSTEMS**

Regulations - 2020

Duration: 3 Hours

Max. Marks: 100

**PART - A (MCQ) (10 × 1 = 10 Marks)**

Answer ALL Questions

	<i>Marks</i>	<i>K- Level</i>	<i>CO</i>
1. Limitations of fossil fuels are _____. (a) Heat and gaseous emission (b) Supply and security related geopolitical issues (c) Extraction complications (d) Resource availability	1	K1	CO1
2. Energy Resources which are being used for many decades are known as _____. (a) conventional energy sources (b) non-conventional energy sources (c) primary energy sources (d) fuel cells	1	K1	CO1
3. The key feature that allows a permanent magnet synchronous generator (PMSG) to produce electricity at a constant frequency is (a) Traditional field windings in the stator (b) Permanent magnets in the rotor (c) Induced electromagnetic force in the rotor (d) Variable rotor speed	1	K1	CO2
4. The primary purpose of using digitally controlled inverters with permanent magnet motors (a) Increase maintenance costs (b) Achieve ease of control (c) Induce DC supply (d) Enhance rotor current	1	K1	CO2
5. The main challenge in protecting power systems with integrated renewable sources is (a) Increased grid stability (b) Reduction in energy losses (c) Enhanced fault tolerance (d) Complexity due to reverse power flow	1	K1	CO3
6. The _____ of power supplied by PV systems depend heavily on weather conditions. (a) Stability (b) Magnitude (c) Orientation (d) Cost	1	K1	CO3
7. The power sources typically used to generate electricity at power plants are (a) Hydro, nuclear, and thermal sources (b) Solar and wind energy (c) Geothermal energy (d) Biomass energy	1	K1	CO4
8. The switching power supply topology commonly employed in isolated uncontrolled rectifiers for galvanic isolation is (a) Buck-boost converter (b) Ringing choke converter (c) Flyback converter (d) SEPIC converter	1	K1	CO4
9. The viable option for village electrification, when both micro hydel and solar PV systems are used together is (a) Urban electrification (b) Rural electrification (c) Industrial electrification (d) Metropolitan electrification	1	K1	CO5
10. A biomass-diesel hybrid system primarily uses a _____ process for solid fuels. (a) Combustion (b) Gasification (c) Pyrolysis (d) Fermentation	1	K1	CO5

**PART - B (12 × 2 = 24 Marks)**

Answer ALL Questions

11. Classify the types of fuel cell.	2	K2	CO1
12. Summarize the factors influencing solar power extraction.	2	K2	CO1
13. Show the merits of squirrel cage induction generators for wind energy conversion.	2	K2	CO2
14. Define Clarke transformation.	2	K1	CO2
15. Outline the factors to be considered for the selection of inverter and batteries for solar energy conversion.	2	K2	CO3

*K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create*

**13940**

