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School of Engineering
M.Tech Power System Engineering
Mid Term Examination - May 2024

Duration : 90 Minutes
Max Marks : 50

Sem II - G2PI204B - Power Electronics Applications in Renewable Energy Systems

General Instructions

Answer to the specific question asked

Draw neat, labelled diagrams wherever necessary

Approved data hand books are allowed subject to verification by the Invigilator

- 1) Explain a fuel cell, and how does it generate electricity? K2 (2)
- 2) Define hydrogen energy and what are its potential applications in the energy sector? K1 (3)
- 3) Explain the working principle of a hydrogen fuel cell and its potential applications. K2 (4)
- 4) Explain the concept of energy conversion and its significance in meeting human needs. K2 (6)
- 5) Illustrate the process of energy flow in a typical power generation system. K3 (6)
- 6) Illustrate the operating principles of a solar photovoltaic (PV) system. K3 (9)
- 7) Analyze the environmental impact of large-scale hydropower projects on aquatic ecosystems. K4 (8)
- 8) Analyze the advantages and disadvantages of different types of fuel cells, such as alkaline, phosphoric acid, and molten carbonate. K4 (12)

OR

- Analyze the design and control strategy of an AC-DC-AC converter impact its performance and effectiveness in mitigating power quality problems. K4 (12)