


VIT
 Vellore Institute of Technology

Course:

Final Assessment Test - November 2025
BMEE415L - Electrical Machines, Drives and Power Systems

Class NBR(s): 3137

Time: Three Hours

Slot: E1+TE1

Max. Marks: 100

- **KEEPING MOBILE PHONE/ANY ELECTRONIC GADGETS, EVEN IN 'OFF' POSITION IS TREATED AS EXAM MALPRACTICE**
- **DON'T WRITE ANYTHING ON THE QUESTION PAPER**

COs	CO Statements
CO1	Explain the fundamental concept of electric drives.
CO2	Discuss operation of DC-DC and various types of inverters design and applications.
CO3	Analyze mathematical model and drives of induction, SRM motors.
CO4	Enumerate the characteristics and permanent magnet motor drives.
CO5	Explain various ways of electrical energy generation, transmission, and smart grid concept.
CO6	Analyze the various charging types, standards and wireless charging technology.

BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)

Answer ALL Questions

(10 X 10 = 100 Marks)

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| 1. | Explain in detail about dynamics of motor load and discuss about the rotational and translation motion when gear is added to the motor. | CO1 | BL2 |
| 2. | Discuss about control analysis of DC drives fed through single phase full controlled rectifiers. | CO1 | BL3 |
| 3. | Discuss in detail about operation and voltage control of three phase inverter. | CO2 | BL3 |
| 4. | With circuit diagram, explain about the Buck converter and Cuk converter. | CO2 | BL2 |
| 5. | Discuss in detail about the rotating magnetic field of an induction motor with its alternative analysis. | CO3 | BL3 |
| 6. | Explain in detail about the close loop control with Synchronous Reluctance Motors drive. | CO4 | BL3 |
| 7. | Explain about the construction and working principle of PMBLDC motor. | CO5 | BL3 |
| 8. | With neat sketch discuss in detail about vector control based PMSM drive. | CO5 | BL3 |
| 9.a) | Explain about controlling of power balance between generator and load. | CO6 | BL3 |

OR

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| 9.b) | With neat sketch discuss in detail about Smart grid system. | CO6 | BL3 |
| 10.a) | Explain with neat sketch, about the inductive wireless charging system of an electric vehicle. | CO6 | BL3 |

OR

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|-------|---|------------|------------|
| 10.b) | Discuss in detail about the DC fast charging system and compare advantages over the AC charging system. | CO6 | BL3 |
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