

Enroll No

K.E.Society's  
**Rajarambapu Institute of Technology, Rajaramnagar**  
 (An Empowered Autonomous Institute, affiliated to SUK)  
**Unit Test -II (2025-26)**

Q.P. Code
UT 3223

Course Code: EEMD301

Course Name: Electrical Machines

Day & Date: Monday 22/09/2025

Time: 3:45 To 4:45

Max Marks- 25

- Instructions:**
- 1) All questions are compulsory.
  - 2) Figures in rounded ( ) brackets within the question, indicate the scheme of marking for respective part of the question, whereas, figures in the first right column indicate total marks for that whole question.
  - 3) CO is the index number of the Course Outcome statement.
  - 4) The Bloom's taxonomy level (BL) for 1,2,3,4,5 and 6 is remember, understand, apply, analyze, evaluate and create respectively.
  - 5) Assume suitable data if necessary.
  - 6) Use of non-programmable calculators is allowed

- |   | Marks | BT Level | COs |
|---|-------|----------|-----|
| Q.1 A Describe why single phase induction motor is not self-starting (2 marks) and explain any one single phase induction motor (2) with neat sketch (2 marks).   | 6     | BL2      | CO3 |
| <b>OR</b>   |       |          |     |
| Describe necessity of a starter for an induction motor (2 marks) and explain the operation of a Star-Delta starter (2 marks) with a labeled circuit diagram (2 marks)                                   |       |          |     |
| B List differences between a squirrel cage and a wound rotor induction motor (3 marks) and write application for each motor type (1 mark).  | 4     | BL2      | CO3 |
| C A 3 phase, 4 pole 50 Hz induction motor has a slip of 2% at no load and 3% at full load. Determine<br>(i) synchronous speed (1 mark)<br>(ii) no load speed (1 mark)<br>(iii) full load speed (1 mark) | 3     | BL4      | CO3 |
| Q.2 A Sketch a labeled Synchronous Generator (2 marks) and explain working (2 marks) and construction (2 marks) of Synchronous Generator.   | 6     | BL3      | CO4 |

**OR**

Sketch a labeled phasor diagrams and explain effect of armature reaction on alternator at following load conditions. (2 marks each)  
 i) Unity p.f.    ii) Lagging p.f.    iii) Leading p.f. (p.f- Power factor)

- B Derive an emf equation of an alternator.

6    BL4    CO4

