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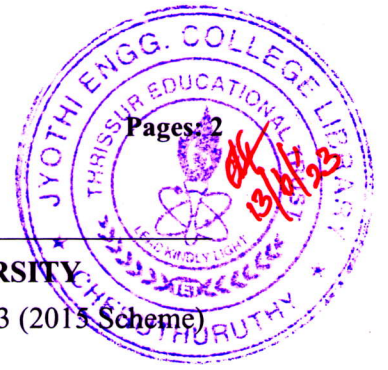
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Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S8 (S, FE) / S6 (PT) (S, FE) Examination June 2023 (2015 Scheme)



Course Code: EE402

Course Name: Special Electrical Machines

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks.

Marks

- | | | |
|---|---|-----|
| 1 | Explain the working of Series split field DC servomotors. | (5) |
| 2 | Differentiate between monofilar and bifilar windings of stepper motor. | (5) |
| 3 | Explain the principle of operation of universal motor. | (5) |
| 4 | Explain any one power converter circuit for Switched Reluctance motors. | (5) |
| 5 | What are the advantages and disadvantages of Brushless DC motor? | (5) |
| 6 | Explain the working of a Permanent Magnet DC motor with neat diagram. | (5) |
| 7 | Discuss the principle of working of linear synchronous motor. | (5) |
| 8 | Describe the equivalent circuit diagram of linear induction motor. | (5) |

PART B

Answer any two full questions, each carries 10 marks.

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| 9 | Explain the working of armature controlled and field controlled d.c. Servomotors with neat diagrams. | (10) |
| 10 | a) List the applications of ac servo motors. | (5) |
| | b) Explain the dynamic characteristics of a stepper motor. | (5) |
| 11 | Explain any two modes of excitation used in three phase permanent magnet stepper motor. | (10) |

PART C

Answer any two full questions, each carries 10 marks.

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| 12 | Explain the working of a Hysteresis motor and derive its torque equation. | (10) |
| 13 | a) Discuss the basic principle behind the operation of a Switched Reluctance motor? | (5) |
| | b) Explain the working principle of a AC series motor. | (5) |
| 14 | Derive the torque equation of a switched reluctance motor and draw the torque slip characteristics. | (10) |

PART D

Answer any two full questions, each carries 10 marks.

- 15 Explain the working of a Brushless DC motor with a neat connection diagram (10) and explain how unidirectional torque is developed by the machine. List its applications.
- 16 a) What are the advantages and disadvantages of Brushless DC motor? (5)
b) Explain the principle of operation of linear reluctance motors. (5)
- 17 With necessary diagrams compare the construction and working of permanent magnet linear synchronous motor with active reaction rail and passive reaction rail. (10)
