

Reg. No:

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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Regular & Supplementary Examinations March-2023
ELECTRICAL MACHINES-I
(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

- | | | | | |
|---|--|-----|----|----|
| 1 | a Distinguish between Lap and Wave windings. | CO1 | L2 | 6M |
| | b A 400V 1000A lap wound dc machines has 10 poles and 860 armatures conductors. calculate the number of conductors in the pole face to give full compensation if the pole face covers 70% pole span. | CO1 | L3 | 6M |

OR

- | | | | | |
|---|---|-----|----|----|
| 2 | a Explain the methods of improving commutation. | CO1 | L3 | 6M |
| | b Explain the term reactance voltage in DC generator. | CO1 | L3 | 6M |

UNIT-II

- | | | | | |
|---|--|-----|----|----|
| 3 | a What are the conditions for voltage build-up of a shunt generator. | CO2 | L3 | 6M |
| | b Explain the no-load characteristics for self-excited generator. | CO2 | L2 | 6M |

OR

- | | | | | |
|---|---|-----|----|----|
| 4 | a Explain the no-load characteristics for separately-excited generator. | CO2 | L2 | 6M |
| | b What are the causes for failure to self-excitation of DC generator. | CO2 | L3 | 6M |

UNIT-III

- | | | | | |
|---|---|-----|----|----|
| 5 | a A 440 v shunt motor has armature resistance of 0.8 ohm and field resistance of 200. Determine the back emf when giving an output of 7.46kW at 80% efficiency. | CO4 | L3 | 6M |
| | b Explain the characteristic of DC shunt motor. | CO4 | L3 | 6M |

OR

- | | | | | |
|---|--|-----|----|-----|
| 6 | Explain Ward- Leonard method of speed control. | CO4 | L4 | 12M |
|---|--|-----|----|-----|

UNIT-IV

- | | | | | |
|---|------------------------------------|-----|----|-----|
| 7 | Explain 3 point starter in detail. | CO5 | L3 | 12M |
|---|------------------------------------|-----|----|-----|

OR

- | | | | | |
|---|--|-----|----|----|
| 8 | a What are the losses in DC machines. | CO5 | L2 | 6M |
| | b Explain retardation test for DC machine in detail. | CO5 | L3 | 6M |

UNIT-V

- | | | | | |
|---|--|-----|----|----|
| 9 | a Explain the construction and operation of universal motor. | CO6 | L4 | 6M |
| | b Explain the method of speed control of universal motor. | CO6 | L4 | 6M |

OR

- | | | | | |
|----|--|-----|----|-----|
| 10 | Explain construction and working principles of Switched Reluctance Motor(SRM). | CO6 | L4 | 12M |
|----|--|-----|----|-----|

*** END ***

Reg. No. _____

INSTITUTE OF ENGINEERING & TECHNOLOGY: PUTTUR

(AUTONOMOUS)

B.Tech II Year I Semester Regular & Supplementary Examinations March-2023

ELECTRICAL MACHINES-I

(Electrical and Electronics Engineering)

Max. Marks: 60

Time: 3 hours

(Answer all Questions 2 x 12 = 24 Marks)

104

UNIT-I

- 1 a) Distinguish between Lap and Wave windings. (12)
- b) A 400V, 1000A lap wound dc machine has 10 poles and 800 armatures. Calculate the number of conductors in the pole face to give full compensation if the pole face covers 70% pole span. (12)

OR

- 2 a) Explain the methods of improving commutation. (12)
- b) Explain the armature reaction voltage in DC generator. (12)

UNIT-II

- 3 a) What are the conditions for voltage build-up of a shunt generator. (12)
- b) Explain the no-load characteristics for self-excited generator. (12)
- 4 a) Explain the load characteristics for separately excited generator. (12)
- b) What are the factors for failure to self-excitation of DC generator. (12)

UNIT-III

- 5 a) A 440V shunt motor has armature resistance of 0.8 ohm and field resistance of 500 ohms. Calculate the back emf when giving an output of 7.46kW at 80% efficiency. (12)
- b) Explain the characteristics of DC shunt motor. (12)
- 6 Explain Ward-Leonard method of speed control. (12)

UNIT-IV

- 7 Explain speed control in detail. (12)
- 8 a) What are the losses in DC machines. (12)
- b) Explain retardation test for DC machine in detail. (12)

UNIT-V

- 9 a) Explain the construction and operation of universal motor. (12)
- b) Explain the method of speed control of universal motor. (12)
- 10 Explain construction and working principle of Switched Reluctance Motor (SRM). (12)