Code No: 137HG

R16

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, December - 2019
SPECIAL MACHINES
(Electrical and Electronics Engineering)

Time: 3 Hours　　　　　　　　　　　　　　　　　　　　　　　Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a)	State the applications of Rototrol generator.	[2]
b)	Explain the principle of working of reversible Booster.	[3]
c)	Define step angle in case of a stepper motor.	[2]
d)	Find the resolution of a stepper motor that is to be operated at an input pulse frequency of 6000 pulse/sec and travel a distance of 180^0 in 0.025 sec.	[3]
e)	Write the torque equation of Switched reluctance motor.	[2]
f)	State the applications of Variable reluctance motor.	[3]
g)	What is hysteresis loop?	[2]
h)	Compare mechanical and electronic commutator.	[3]
i)	Draw the schematic diagram of DSLIM.	[2]
j)	State the advantages of Linear Induction Motor.	[3]

PART – B

(50 Marks)

2. Explain the working principle of Metadyne with a neat diagram. [10]

OR

3. Explain the working principle of series booster with a neat diagram. [10]

4. Explain the operation of very slow speed synchronous motor used for servo control applications. [10]

OR

5. Explain different configurations for switching the phase windings of a stepper motor. [10]

6. Explain Open-loop control of 3-phase Variable reluctance (VR) stepper motor. [10]

OR

7. Describe the various power converter circuits used for supplying SRM. [10]

8. How do you show that BLDC Motor action is identical to a conventional synchronous motor under steady state conditions? [10]

OR

9. Explain the various methods of reducing torque pulsations of BLDC motor. [10]

10. Explain the development of a single sided LIM from DSLIM. [10]

OR

11. Discuss the field analysis of a DSLIM. [10]

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