Total No. of Questions—**8**] [Total No. of Printed Pages—**2**

Seat No.	

[5668]-133

S.E. (E&TC and Electronics) (I Semester) EXAMINATION, 2019

ELECTRICAL CIRCUITS AND MACHINES

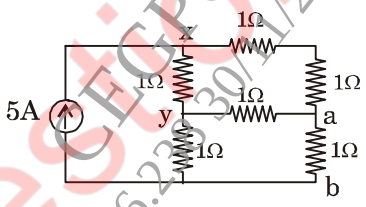
(2015 PATTERN)

Time : Two Hours **Maximum Marks : 50**

N. B.

i. Figures to the right indicates full marks
ii. Draw neat diagrams wherever necessary
iii. Use of non-programmable electronics pocket calculator is allowed
iv. Assume suitable data if necessary

Q.1 a) Using current source shifting and source transformation technique obtain equivalent voltage across the terminal a – b in the circuit shown below. All resistors are in ohms (6)



b) Derive the EMF equation of single phase transformer (6)

OR

Q.2 a) State and Explain Maximum Power Transfer Theorem (6)

b) Write a short note on Isolation Transformer (6)

Q. 3 a) Derive the torque equation for DC motor. Draw the torque – current and torque – speed characteristics of a shunt motor using torque equation (6)

b) Discuss briefly different methods of speed control for three phase induction motors (6)

OR

Q. 4 a) Explain Torque – Slip characteristics of three phase induction motor. Explain the effect of rotor resistance on its characteristics with near diagram (6)

b) Explain the difference between squirrel age induction motor and slip ring induction motor (6)

P.T.O.

Q. 5 a)	Explain the construction and working of BLDC motor. Also draw the speed – torque characteristics		**(7)**
b)	Write a short note on reluctance motor		**(6)**
	OR		
Q. 6 a)	Explain the construction and working principle of Universal motor		**(7)**
b)	Distinguish between BLDC and Conventional DC motors		**(6)**
Q. 7 a)	What are stepper motors ? Explain any one type of Stepper motor in detail with its applications		**(7)**
b)	Compare variable reluctance motor with permanent magnet stepper motor		**(6)**
	OR		
Q.8 a)	Explain construction & working of AC Servomotor. State its applications		**(6)**
b)	What are induction motors ? Explain operating principle of shaded single phase Induction Motor		**(7)**