Total No. of Questions : 8]

SEAT No. :

P-9697

[Total No. of Pages : 2

[6179]-228A
S.E. (Electronics/E & TC Engineering)
ELECTRICAL CIRCUITS
(2019 Pattern) (Semester - III) (204183)

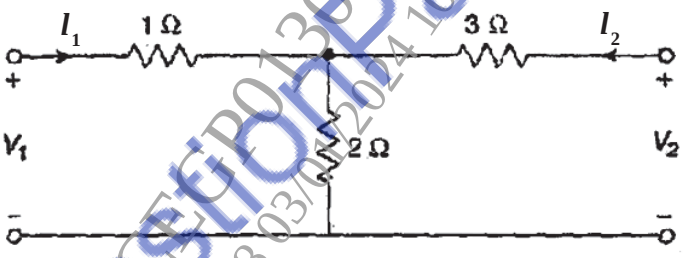
Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6 and Q7 or Q8.***
2) ***Figures to the right side indicate full marks.***
3) ***Assume suitable data, if necessary.***

Q1) a) Give the basic definitions of Y parameters. Why they are called as short circuit admittance parameters? **[6]**

b) Find the Y parameters for the network shown below: **[6]**

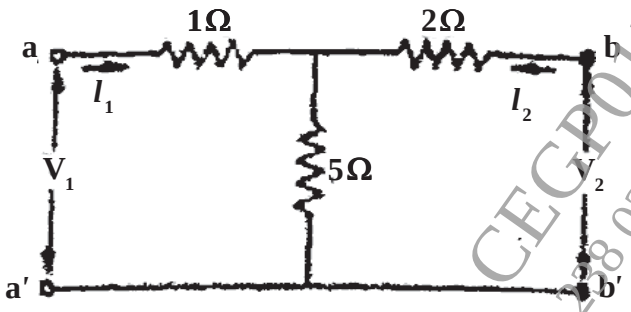


c) Define basic h- parameters and give the significance of each parameter. **[6]**

OR

Q2) a) Define the ABCD parameters and write the applications for the same. **[6]**

b) Find the transmission parameters of the circuit given below. **[6]**



c) What do you mean by the reciprocal network? Derive the condition for reciprocity for Y parameters. **[6]**

P.T.O.

Q3) a) Sketch the neat constructional diagram of DC machine. List the various parts stating the function of each part. **[6]**

b) Explain the various methods of speed control of DC series motor. **[6]**

c) Draw the neat diagram and explain the operation of three point starter. **[5]**

OR

Q4) a) Derive the torque equation of DC motor. **[6]**

b) Explain the various types of DC motors with their circuit diagrams and voltage-current equations. **[6]**

c) Draw and explain the various characteristics of DC shunt motor. **[5]**

Q5) a) Explain the construction and working of three phase induction motor. **[6]**

b) Explain the v/f method of controlling the speed of three phase induction motor. **[6]**

c) Explain the power flow diagram of an induction motor. **[6]**

OR

Q6) a) Describe the principle of operation of single phase split phase type induction motor with torque speed characteristics. **[6]**

b) The rotor of six pole, 440 V, 50 Hz, three phase induction motor, has power input of 60 KW. The frequency of rotor emf is 1.5 KHz. Calculate; **[6]**

i) Rotor copper loss

ii) Gross mechanical power developed

iii) Rotor resistance per phase if the rotor current per phase is 58 Ampere

c) With the help of diagram explain the DOL starter. **[6]**

Q7) a) Explain the block diagram of electric vehicle. State its advantages and limitations. **[6]**

b) Which are the different types of batteries used for Electric vehicles? Explain any one in details. **[6]**

c) What are the limitations of Lithium-Ion batteries? **[5]**

OR

Q8) a) Explain the construction of brushless DC motor. Draw and explain the torque-speed characteristics. **[6]**

b) What is step angle in the stepper motor State the expression for it. **[6]**

c) Compare variable reluctance motor with permanent magnet stepper motor. **[5]**