Total No. of Questions : 8]

SEAT No. :

PB-3623

[Total No. of Pages : 3

[6261]-28
S.E. (E&TC Engineering)
ELECTRICAL CIRCUITS
(2019 Pattern) (Semester - III) (204183)

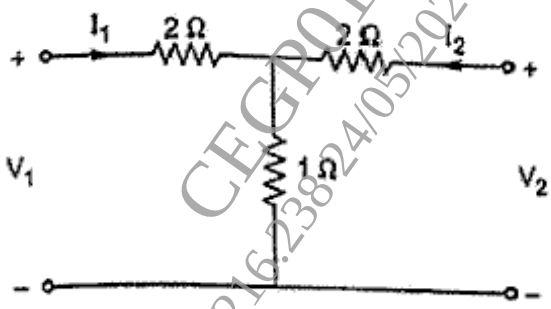
Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

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

Q1) a) Define Z parameters. Why Z parameters are called open circuit parameters. **[6]**

b) Obtain the Z parameters of the network shown below **[6]**



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

OR

Q2) a) Define basic h- parameters and give the significance of each parameter.**[6]**

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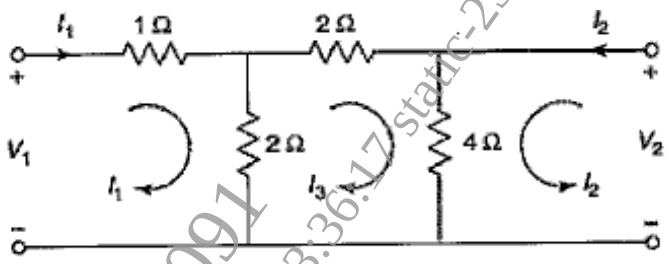
b) Find the h parameters for the network given below **[6]**



c) What do you mean by symmetrical network? Derive the condition of symmetry for Z parameters. **[6]**

Q3) a) Draw and explain the various characteristics of DC shunt motor. **[5]**

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

c) Which are the different methods of speed control of DC shunt motor explain any one method. **[6]**

OR

Q4) a) Explain the function of no volt coil and overload release used in three point starter. **[5]**

b) Explain the construction and working of permanent magnet DC motor. **[6]**

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

Q5) a) Explain the working principle of three phase induction motor with neat diagrams. **[6]**

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

c) Describe the working principle of operation of single phase induction motor using capacitor. Draw the circuit and phasor diagram. **[6]**

OR

Q6) a) Derive the torque equation for three phase induction motor. **[6]**

b) Sketch and explain the torque – slip characteristics for three phase induction motor and explain the effect of variation of rotor resistance on it. **[6]**

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

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Q7) a) Explain the working of brushless DC motor with neat diagram. **[6]**

b) Draw and explain the torque-speed characteristics of brushless DC motor. **[6]**

c) What is step angle in the stepper motor State the expression for it. **[5]**

OR

Q8) a) Explain the block diagram of electric vehicle. State its advantages and limitations. **[6]**

b) Explain the operation of variable reluctance stepper motor. **[6]**

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

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