Exam.Code:0906
Sub. Code: 33296

2015
B.E., Second Semester
EC-204: Electrical Science

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: ***Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Section.***

x-x-x

Q.1 Attempt all Questions: - (2*5= 10 Marks)

a) Differentiate between self inductance and mutual inductance.

b) Explain the use of Tellegen's theorem.

c) What are hybrid parameters w.r.t two port networks.

d) Derive the characteristics impedance of pure reactive networks.

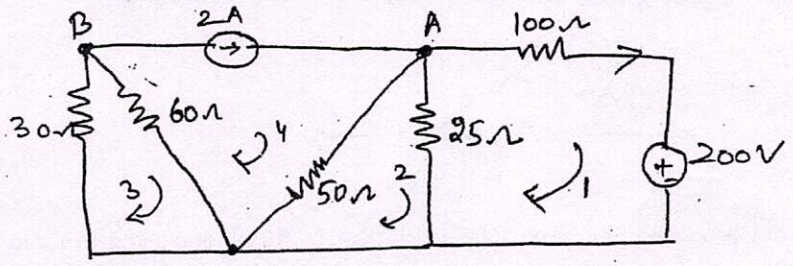
e) What are the various speed control methods w.r.t electrical machines

Section- A

Q.2

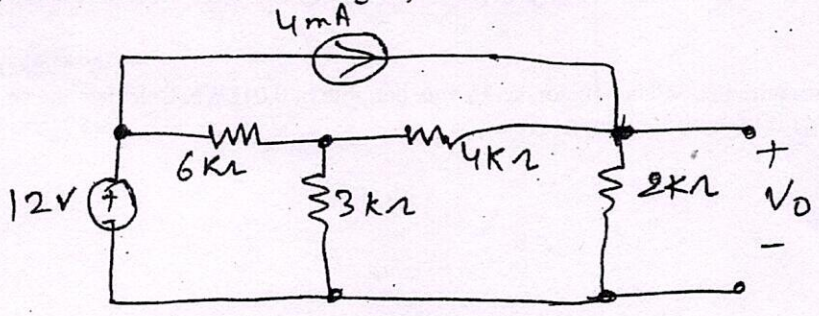
a) How star network can be converted to delta network? (5 Marks)

b) For the circuit shown in the figure, find the power supplied by the 2A current source. (5 Marks)



Q.3

a) For the circuit shown in the figure, the value of Vo? (5 Marks)



b) State and explain Reciprocity Theorem. (5 Marks)

P.T.O.

Q.4

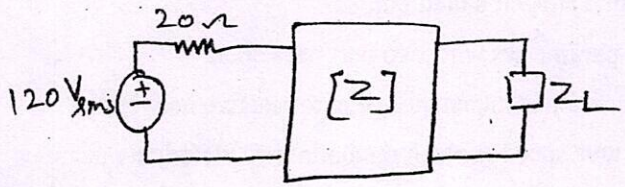
a) Find the pole zero plot of the network function given as V(s) and obtain v(t) (5 Marks)

$$V(s) = \frac{10s}{(s+3)(s+2)}$$

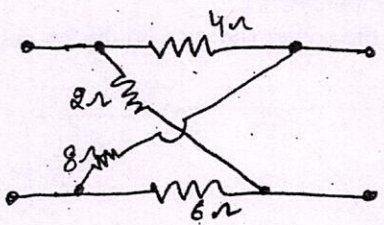
b) What are the limitations of poles and zeros in transfer functions? (5 Marks)

Section- B

Q.5 a) For the two port network, what is the value of load impedance Z_L for maximum power transfer, where $Z_{11}=10$, $Z_{12}=40$, $Z_{21}=30$ and $Z_{22}=60$ (5Marks)



b) Calculate the y matrix of the two port network shown in the following figure (5Marks)



Q.6

Design a constant k band stop filter from 2000Hz to 5000 Hz, R0,k = 600 ohms in T and Pi configuration . Also represent it graphically. (10 Marks)

Q.7

a) Classify DC Machines (5 Marks)

b) A six pole lap wound armature has 840 conductors and a flux per pole of 0.018Wb. Calculate the emf generated, when the machine is running at 600rpm (5 Marks)

x-xx-