

M.Sc. S.Y. (Electronics) (CBCS Pattern) Sem-III
PSELT301 - Paper-I - Core-IX : Network Analysis and Synthesis

P. Pages : 2

Time : Three Hours



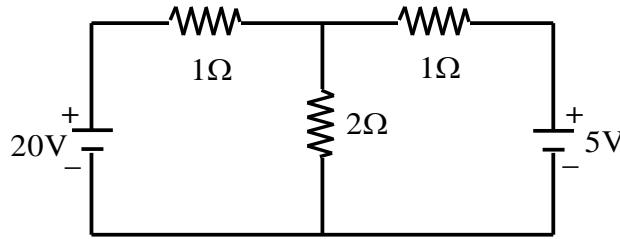
GUG/W/22/11252

Max. Marks : 80

- Notes :
1. All questions are compulsory and carry equal marks.
 2. Draw neat and labelled circuit diagram wherever necessary.
 3. Use of log table / calculator is allowed.

Either:

1. a) Explain the mesh analysis. Find the current using mesh analysis in the following network. 8

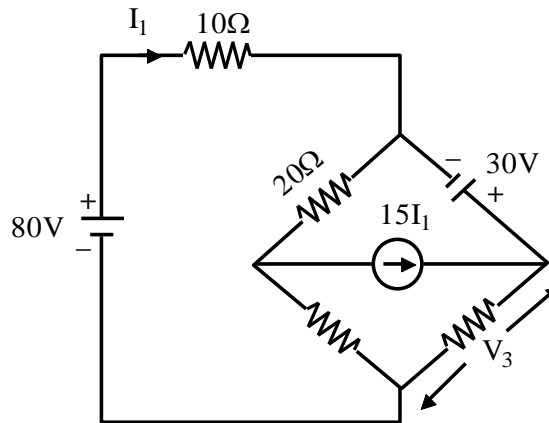


- b) Explain the nodal analysis method for solving a network. 8

OR

- c) What is super mesh analysis? Explain. 8

- d) Determine V_3 in the following network using super mesh analysis. 8



Either:

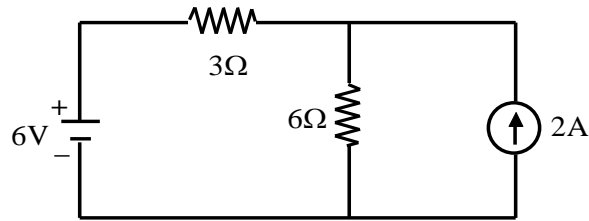
2. a) What is Reciprocity theorem? Explain. 8

- b) Explain the star – delta and Delta star transformation in the network. 8

OR

- c) State and prove Millman's theorem. 8

- d) State and prove superposition theorem. Find the current in the 6Ω resistor using superposition theorem in the following network. 8



Either:

3. a) Define Laplace transformation and state its properties. 8
 b) What is Heaviside's expansion? Explain with example. 8

OR

- c) Discuss and explain any two properties of Laplace transformation. 8
 d) Find decomposition for. 8

i) $\frac{x}{x^2 - 2x - 3}$ ii) $\frac{x^2 - 2}{(x - 2)(x + 1)^3}$

Either:

4. a) Discuss the necessary and sufficient conditions for the Location of poles and zeros in driving point function. 8
 b) Describe Hurwitz polynomials with suitable examples. 8

OR

- c) Describe the synthesis of RC network by foster method. 8
 d) Explain the of pole and zero of network function with suitable example. 8
5. a) Explain state variable analysis. 4
 b) Explain reciprocity theorem. 4
 c) Explain partial function expansion. 4
 d) What is Routh Hurwitz criterion for stability? 4
