Code: 9A02401

R09

B.Tech II Year II Semester (R09) Supplementary Examinations December/January 2014/2015

PRINCIPLES OF ELECTRICAL ENGINEERING

(Common to ECE, EIE, E.Con.E & ECC)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

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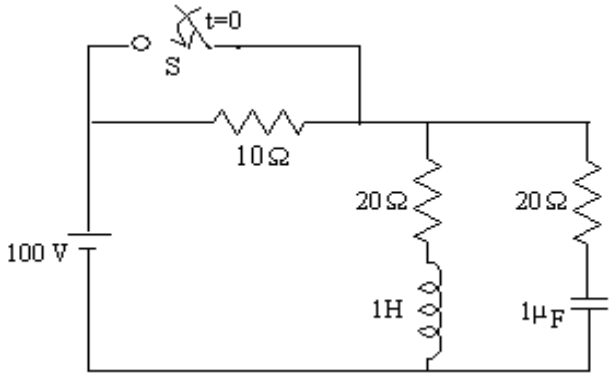
1 Find initial conditions for voltage across capacitor, the currents i_1, i_2 and the derivatives for the circuit shown in fig. below. Take R_1=10 Ω.



2 (a) Derive the relation between 'Y' and ABCD parameters.

(b) A two port network has the following parameters: Z_{11} = 4 Ω, Z_{12} = 1 Ω, Z_{21} = 3 Ω and Z_{22} = 3 Ω. Calculate transmission parameters.

3 Design a constant-K band rejection filter having the cut off frequencies f_1 = 1250 Hz and f_2 = 6000 Hz and a characteristic impedance Z_0 = 500 Ω.

4 (a) What is an attenuator? Derive the design equations for Bridged T-type attenuator.

(b) Design a π-type attenuator to give 20 dB attenuation and to have a characteristic impedance of 50 Ω.

5 Explain the characteristics of DC generator in detail.

6 What is the aim of Swinburne's test? Explain the procedure with a neat circuit diagram.

7 A single phase transformer working at 0.6 power factor has an efficiency of 75% at both half load, at full load of 2 kW. Determine the efficiency at 90% of full load.

8 (a) Explain the principle of operation of AC servo motor.

(b) Explain the characteristics of capacitor motor.

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