Code No: 54019

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year II Semester Examinations, May - 2016
PRINCIPLES OF ELECTRICAL ENGINEERING
(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks

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1.a) Find values of v_C and v_o in the circuit shown in the figure 1 at t equal to (i) 0−; (ii) 0+; (iii) 1.3 ms.

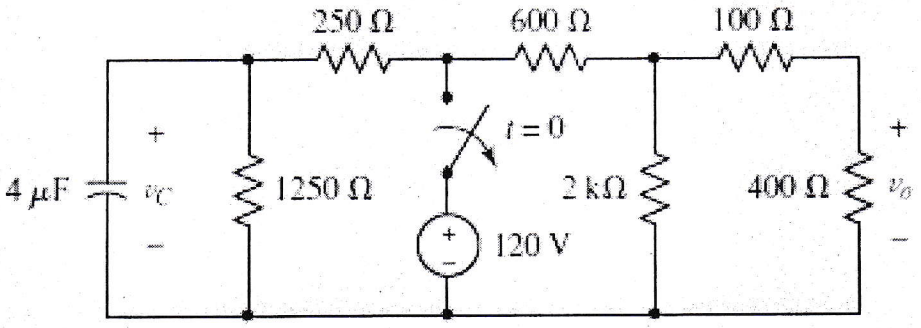

Figure: 1

b) Determine i, i_0, and v_o for all t in the circuit shown in the figure 2. Assume that the switch was closed for a long time. [8+7]

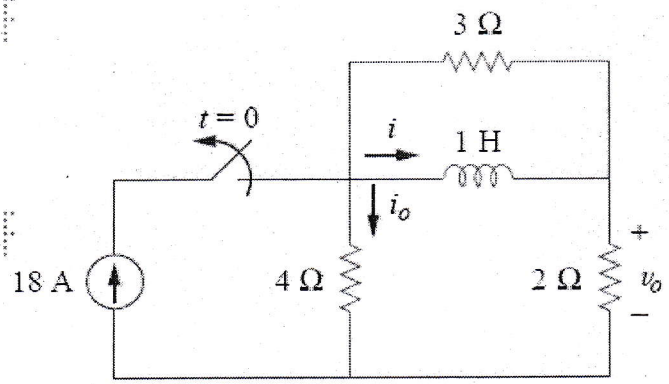

Figure: 2

2.a) Obtain the *y* parameters for the *network* shown in the figure 3.

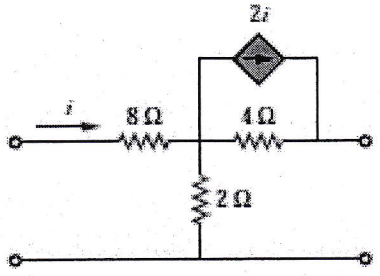

Figure: 3

b) Find the hybrid parameters of the network shown in the figure 4. [8+7]

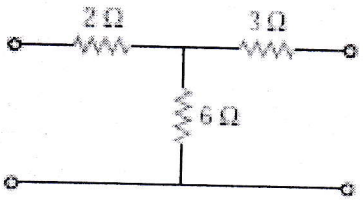

Figure: 4

3.a) Derive the transfer function of high pass filter and draw its characteristics.

b) For the circuit in figure 5. Obtain the transfer function $V_o(\omega)/V_i(\omega)$. Identify the type of filter the circuit represents and determine the corner frequency. Take $R_1 = 100\ \Omega = R_2$, $L = 2$ mH. [8+7]

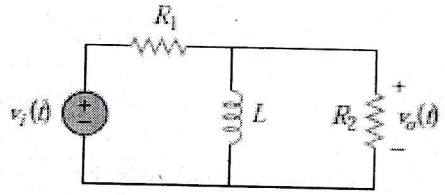

Figure: 5

4.a) What is an attenuator? Classify attenuators and list the differences between them?

b) Draw the circuit diagram of the symmetrical T-attenuator and derive the expression for attenuation introduced by this network? [8+7]

5.a) Explain the classification of DC generators based on the excitation and list the differences between them?

b) An 8-pole, wave-connected armature has 600 conductors and is driven at 625 rev/min. If the flux per pole is 20 mWb, determine the generated e.m.f. [8+7]

6.a) With the help of a neat circuit diagram explain the procedure to conduct swinburne's test on a dc machine and derive the necessary relations to find the efficiency of the machine.

b) A 320V shunt motor takes a total current of 80A and runs at 1000 rev/min. If the iron, friction and windage losses amount to 1.5kW, the shunt field resistance is 40Ω and the armature resistance is 0.2Ω, determine the overall efficiency of the motor. [8+7]

7.a) Draw and explain phasor diagram of single phase transformer operating on leading load.

b) 400 kVA transformer has a primary winding resistance of 0.5 Ω and a secondary winding resistance of 0.001 Ω. The iron loss is 2.5kW and the primary and secondary voltages are 5 kV and 320 V respectively. If the power factor of the load is 0.85, determine the efficiency of the transformer (i) on full load and (ii) on half load. [8+7]

8.a) Explain the construction and working principle of shaded pole motor.

b) Write short notes on stepper motor and ac series motor? [8+7]

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