

FACULTY OF ENGINEERING

B.E. 2/4 (Inst.) I – Semester (Suppl.) Examination, June 2013

Subject: Network Theory

Time: 3 Hours

Max.Marks: 75

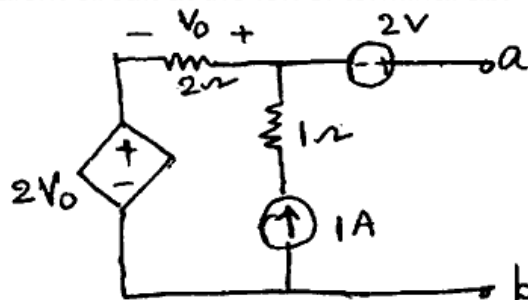
Note: Answer all questions from Part A. Answer any five questions from Part B.

PART – A (25 Marks)

1. A 20  $\mu\text{f}$  capacitor is connected in parallel with a 40  $\mu\text{f}$  capacitor and the combination is connected across a time varying voltage source. At a particular time, the current supplied by the source is 5A obtain the magnitude of instantaneous currents through the individual capacitors. (3)
2. State and explain the superposition theorem. (2)
3. A dc constant voltage source feeds a resistance of 200 k $\Omega$  in series with a 5  $\mu\text{f}$  capacitor. Find the time taken for the capacitor when the charge retained will be decayed to 50% of the initial value, the voltage source being short circuited. (3)
4. What do you understand by initial conditions? Explain. (2)
5. The current in the resistive branch of a parallel RC circuit is given by  $i_r = 10 \cos(1000t - 10^\circ)\text{A}$ . What is the current in the capacitance? Assume  $R=10 \text{ k}\Omega$ ,  $C = 10 \mu\text{f}$  (3)
6. A series circuit has  $R=4\Omega$  &  $L=10.01\text{H}$ . Find the impedance at 500Hz. (3)
7. In two wattmeter method of measuring three phase power in a balanced load, compute the p.f. of the load if reading of one wattmeter is double that of the other. (2)
8. Define bandwidth and selectivity with respect to series RLC circuit. (2)
9. Explain the Z parameters of a two port network. (2)
10. The Z parameters of a two port network are  $Z_{11}=10\Omega$ ,  $Z_{22}=20\Omega$ ,  $Z_{12} = Z_{21} = 5\Omega$ . Find its equivalent T-network. http://www.osmaniaonline.com (3)

PART – B (50 Marks)

11. Find Norton's equivalent circuit at the left of terminal ab. (10)



...2.