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MANIPAL INSTITUTE OF TECHNOLOGY Manipal University

THIRD SEMESTER B.TECH (E & C) DEGREE END SEMESTER EXAMINATION NOV/DEC 2015 SUBJECT: NETWORK ANALYSIS (ECE 203)

MAX. MARKS: 50

- Instructions to candidates

 Answer ANY FIVE full questions.
 Missing data may be suitably assumed.

 1A. Find I₁ and I₂ in the circuit shown in the Fig.Q1A using KCL
 1B. Write the loop equation for the circuit shown in Fig. Q1B.
- 2A. Find V_0 in the network of Fig. Q2A using Superposition theorem
- 2B. Find the equivalent resistance R_{ab} for the circuits shown in Fig. Q2B (a) & (b).

(5+5)

(5+5)

- 3A. The circuit shown in Fig. Q3A is in steady state when switch K is opened. At t = 0, the switch is closed. Find the values of $v_a (0^-)$ and $v_a (0^+)$.
- 3B. In the circuit shown in Fig. Q 3B, switch K is closed at t = 0. The current waveform is observed with a cathode ray oscilloscope. The initial value of the current is measured to be 0.01 amp. The transient appears to disappear in 0.1 sec. Find: (a) the value of R, (b) the value of C and (c) the equation of i(t).

(5+5)

Find the particular solution to the differential equation $\frac{d^2i}{dt^2} + 2\frac{di}{dt} + i = 1$ for the following

initial conditions: i(0+) = 2; $\frac{di}{dt}(0+) = -1$.

4B. For the circuit shown in Fig Q 4B, find the current i(t) using Laplace transform method.

(5+5)

- 5A. A 10 Hz symmetrical square wave whose peak-to-peak amplitude is 2 V is impressed upon a highpass circuit whose lower 3-dB frequency is 5 Hz. Calculate and sketch the output waveform. In particular, what is the peak-to-peak amplitude?
- 5B. Find the z parameters of the circuit shown in Fig. Q 5B.
- 6A. What is the power generated by the source in the network in Fig. Q 6A?
- 6B. Determine the maximum power that can be delivered to the load R_L in the network in Fig. Q 6B.

(5+5)

(5+5)

4A.



Fig Q 5B

Fig Q 6A

Fig Q 6B