Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

(A Constituent Institute of MAHE – Deemed University)
Manipal – 576 104

THIRD SEMESTER B.E. DEGREE MAKE-UP EXAMINATIONS January 2007

SUBJECT: NETWORK ANALYSIS (BME 203)

(REVISED CREDIT SYSTEM)

Tuesday, January 09, 2007: 9.00 a.m..- 12.00 noon

TIME: 3 HOURS **MAX. MARKS: 100**

Instructions to Candidates:

1. **Answer any FIVE full questions.**
2. **Draw labeled diagram wherever necessary**

1.	(A)	Find the equivalent resistance between XY in the network of Fig 1.A	08
	(B)	For the network shown in Fig 1.B show that the equivalent network is replaced by $V_\theta=(V_1/2) (1+a+b-ab)$ and $Z_\theta = (3-b)/2$.	08
	(C)	Explain the concept of Maximum Power Transfer Theorem.	04
2.	(A)	For the network of Fig 2.A find Z_L for maximum power at the load and determine the maximum power.	08
	(B)	For the network shown in Fig 2.B write the mesh current equations. Find the power output of the voltage source and determine the power in the circuit resistors.	08
	(C)	Write note on : i) Driving point impedance ii) Nodal analysis	04
3.	(A)	In the network shown in Fig 3.A switch K is changed from position a to b at t=0. Solve for i , di/dt , di^2/dt^2 at $t=0^+$.	08
	(B)	Establish a relation between: i) Impedance of the Series tuned circuit with quality factor ii) Bandwidth of a series tuned circuit with quality factor.	06
	(C)	For the circuit of Fig 3.C find the value of R_1 such that the circuit is at resonance.	06
4.	(A)	A series RLC circuit has a resistance of 10Ω, a capacitance of 100μF and a variable inductance. The applied voltage is 230V, 50Hz. Find i) the value of inductance for which the voltage across the resistance is maximum. Ii) Quality factor iii) Voltage drops across R, L, and C.	08
	(B)	Explain the following terms: i) Selectivity ii) Quality factor iii) Bandwidth	06
	(C)	The network of Fig 4.C is in steady state with the switch K closed. At t=0 switch is opened . Find V_K at t=o+ and dV_K/dt at t=o+.	06
5.	(A)	Find the laplace transform of the waveforms given in Fig 5.A.	10
	(B)	Express i) Z parameters in terms of Y parameters ii) ABCD parameters in terms of Y parameters.	10
6.	(A)	For the circuit shown in fig 6.A , Find the drop across R_L .	10

(B) i) Find the inverse laplace of the following: a) $5/s(s^2+16)$ b) $(s+5)/s(s^2+6s+9)$ 05

ii) Show that a) $L\{t\ f(t)\} = -(d/ds)\ F(s)$ b) $L\ \{f(t)/t\} = \int F(s)\ ds$ 05