Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

THIRD SEMESTER B.TECH. (INSTRUMENTATION AND CONTROL ENGG.)

END SEMESTER EXAMINATIONS, NOV- 2017

SUBJECT: ELECTRICAL CIRCUIT ANALYSIS [ICE 2101]

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitable assumed.

1A.	Find the mesh currents in the circuit shown in Fig.Q1A.	**5**
1B.	Obtain node voltages V_1 and V_2 for the circuit shown in Fig.Q1B	**3**
1C.	Determine V in the circuit shown in Fig.Q1C.	**2**
2A.	Using Nortons's theorem determine current in 3Ω resistor of Fig.Q2A.	**5**
2B.	Obtain Thevinin's equivalent for the circuit shown in Fig.Q2B with respect to AB.	**3**
2C.	Using superposition theorem determine the current in R_L.	**2**
3A.	In the network shown Fig. Q3A, the switch is opened at t=0, a steady state having previously been attained. Obtain expression for current in complementary and particular solution form.	**5**
3B.	An impedance of (10-j5) Ω is connected in parallel with a coil with inductive reactance j10Ω and variable coil resistance of R_L. Find the value of R_L for which the circuit is in resonant.	**3**
3C.	For the circuit shown in Fig.Q3C find V, if switch is opened at t = 0 assuming that a steady state having previously been attained.	**2**
4A.	For the network shown in Fig. Q4A, find V, dV/dt & d^2V/dt^2 at t=0+.	**5**
4B.	Obtain expression for current in the circuit shown in Fig.Q4B.	**3**
4C.	Express the waveform shown in Fig. Q4C using basic signals.	**2**
5A.	For the circuit shown in Fig.Q5A, find h parameters	**4**
5B.	For the network shown in Fig.Q5B find Y parameters.	**4**
5C.	Sketch the signals (i) $x(t) = r(t) - r(t-1) - r(t-2) + r(t-3)$ (ii) $y((t) = 2u(t) – 4u(t-2) + 2u(t-4)$	**2**

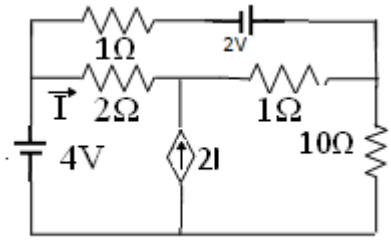

Fig.Q1A

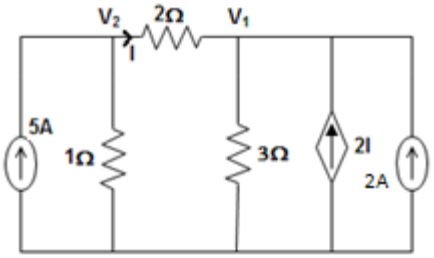

Fig.Q1B

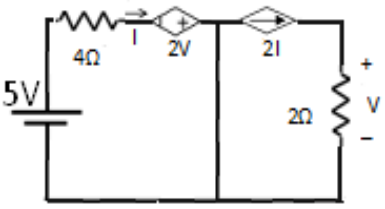

Fig.Q1C

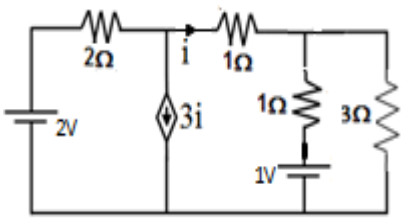

Fig.Q2A

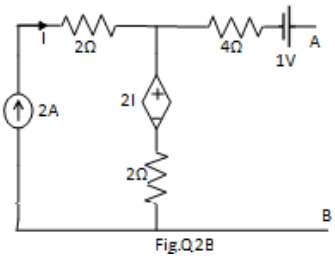

Fig.Q2B

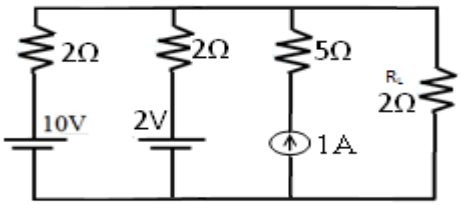

Fig. Q2C

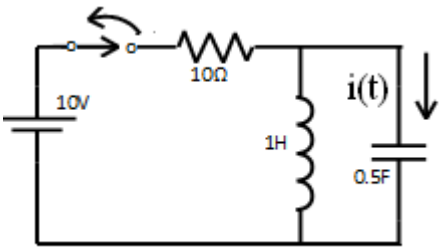

Fig. Q3A

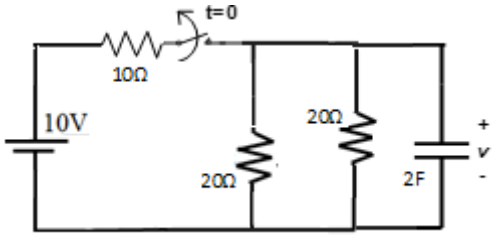

Fig. Q3C

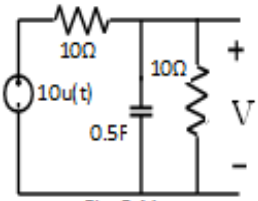

Fig. Q4A

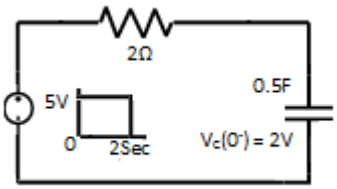

Fig. Q4B

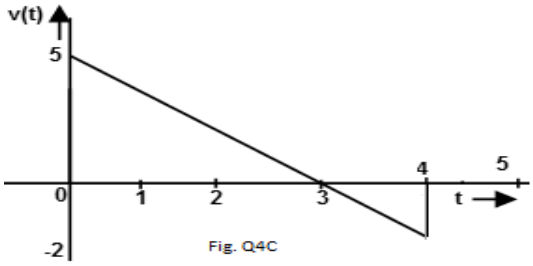

Fig. Q4C

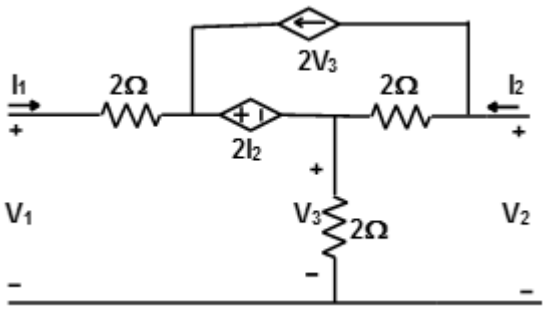

Fig. Q5A

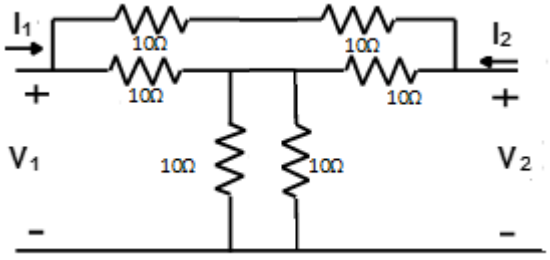

Fig. Q5B