Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY
Manipal University

FIFTH SEMESTER B.TECH (E & C) DEGREE END SEMESTER EXAMINATION
NOV/DEC 2015
SUBJECT: ELECTRONIC SYSTEM DESIGN (ECE- 327)

TIME: 3 HOURS **MAX. MARKS: 50**

Instructions to candidates
- Answer **ANY FIVE** full questions.
- Missing data may be suitably assumed.

1A. Explain Reverse Engineering and Redesign methodology with a case study.
1B. Draw and Explain the V-I characteristics of constant current and voltage sources. Power is to be supplied from a source whose resistance is 20 KΩ to a load of 100Ω. Would you consider it as a constant current source or voltage source? Explain.
1C. Define kolb's model of learning for designing an innovative product.

(5+3+2)

2A. Explain the working of Television mother board with block diagram.
2B. Discuss the stages of manufacturing of an integrated circuit.
2C. Explain Liquid Encapsulated Czochralski system of crystal growth..

(5+3+2)

3A. Explain input and output multiplexing in a data acquisition system.
3B. Develop a microcomputer based system to sense four analogue input signals and produce four analogue outputs. The input come from sensors that produce useful signals with a bandwidth of 1KHz but are known to pick up high frequency noise. These signals are to be measured to an accuracy of at least 1%. The output signals are to drive actuators with a maximum operating bandwidth of 100HZ which are effected by high frequency signals. The actuators require signals to an accuracy of at least 1%.
3C. Explain wafer slicing. Give two reasons why semiconductor wafers requires a flat surface.

(5+3+2)

4A. Explain the working of the typical circuit of switched mode power supply with waveforms. Compare its merits and demerits with other power supplies.
4B. Draw and explain the simplified representation of the automotive engine control unit found in car indicating the flow of energy between various parts.
4C. Discuss the optical isolation circuit for preventing noise in digital circuits.

(5+3+2)

5A. Explain the internal circuit of Operational Trans conductance Amplifier(OTA). Give its merits and demerits over OPAMP.
5B. Discuss different types of cooling technics in power supply thermal design.
5C. Define product quality and reliability in an Electronic system design.

(5+3+2)

6A. Discuss Melfs and chips, SOs and PLCCs, QFPs and TABs in surface mounting Technology.

6B. With melting point diagram Explain wave soldering and reflow soldering.

6C. What do you mean by flicker noise in an electronic circuit? At a particular point in a circuit a signal of 2.5Vrms is corrupted by 10mVrms of noise. Calculate the S/N ratio at this point.

(5+3+2)