Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

SIXTH SEMESTER B.TECH. (E & C) DEGREE END SEMESTER EXAMINATION
APRIL/MAY 2019
SUBJECT: ELECTRONIC SYSTEM DESIGN (ECE - 4023)

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

Instructions to candidates
- Answer **ALL** questions.
- Missing data may be suitably assumed.

1A. Discuss in detail the signal flow chain in electronic system design with an example and explain different stages of Electronic system design.

1B. With neat Ishikawa diagram explain make in India strategy for electronic products and compare Indian domestic market status with china.

(5+5)

2A. With neat diagram explain the steps involved in the production of a double-sided plated through- hole Printed Circuit Board. Why is cleanliness so important in the manufacture of boards.

2B. Draw neat phase diagram for tin/lead solder. Why does the electronic industry employ 60/40 solder.

(5+5)

3A. Describe high resolution, low cost Sigma delta analog to digital converters? Give the block diagram of second order Sigma delta modulator.

3B. Using the 6 bit charge scaling DAC Show that:

(i). the output voltage will be $\frac{1}{2}V_{ref}$ if $D_5D_4D_3D_2D_1$=10000

(ii). the output will be $\frac{1}{64}V_{ref}$ if $D_5D_4D_3D_2D_1$=00001

3C. List the merits and drawbacks of Surface Mount Devices.

(4+3+3)

4A. Explain the need for thermal management in an electronic system with any two types of heat transfer mechanisms.

4B. A power transistor has a thermal resistance of 100^o C/W.

(i). Calculate the maximum permissible power dissipation, when the T_{Jmax}=80^{o}C and T_A=35^{o}C.

(ii). If the heat sink is used and thermal resistance is reduced to 50^{o}C/W, calculate the maximum permissible power dissipation.

4C. Explain quality assurance section in an electronic product development?

(4+3+3)

5A. Describe Low Drop Out (LDO) linear regulators employed in electronic systems that regulates a low noise power source for portable and wireless applications.

5B. Design Tow Thomas (TT) biquad for realizing band pass filter transfer function for f_c =1MHz and Q=5 using OTA-C approach.

5C. The emitter current of a forward biased transistor across the base emitter junction is I_E=10mA at 25^{o}C. Calculate the voltage noise produced by shot noise in a 10KHz bandwidth. Compare that noise with the thermal noise of a conductor having the same resistance.

(4+3+3)