Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

V11 SEMESTER BTECH. (E & C) DEGREE END SEMESTER EXAMINATION

FEBRUARY 2022-March 2022

SUBJECT: Electronic System Design (ECE -4072)

TIME: 75 minutes **MAX. MARKS: 20M**

Instructions to candidates

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

Q. No.	Questions	Marks
1A.	Discuss typical signal flow chain of electronic system design with an example and discuss different stages of system development.	**5**
1B.	Discuss exponential law of reliability. The failure rate per hour of a certain electronic product is given by: $0.02(1 + 30e^{-2t} + e^{-\frac{t}{20}})$ Find MTTF at t=104 hours.	**3**
1C.	A displacement sensor produces an output of 10mV per centimetre of movement and has an output resistance of 300 Ω. It is connected to an amplifier that has an unloaded voltage gain of 15, an input resistance of 5kΩ and an output resistance of 150Ω. The output of the amplifier is connected to a voltmeter with an input resistance of 2 kΩ. Evaluate what voltage will be displayed on the voltmeter for a displacement of the sensor of 1 meter	**2**
2A.	i) Implement first-order sigma-delta modulator using a switched capacitor integrator. ii)Suppose a system is using a 12-bit ADC to output a temperature value once every second(1Hz). calculate the oversampling frequency to increase the resolution the measurement to 16 bits.	**5**
2B.	Using the switched capacitor technique, implement the first order passive RC Low pass circuit so that the product of RC is 1msec and fclk=100KHz. Assume C1=10pF.	**3**
2C.	Build the bathtub curve used to correlate quality and reliability of an electronic product	**2**