MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL (A constituent unit of MAHE, Manipal)

FOURTH SEMESTER B.TECH. (E & C) DEGREE END SEMESTER EXAMINATION APRIL/MAY 2019

SUBJECT: ELECTRONIC PRODUCT DESIGN AND PACKAGING (ECE - 3282)

TIME: 3 HOURS

Instructions to candidates Answer ALL questions.

- Missing data may be suitably assumed. •
- 1A. Explain in detail, steps involved in Product design process.
- The inner and outer surface temperature of a glass window 6 mm thick are 10°C and 20°C, 1B. respectively. What is the heat loss through a window that is 2 m by 5 m on a side? The thermal conductivity of glass is 1.5W/mK.
- 1C. What are the sources of new ideas? List it and any three in details.

(4+3+3)

- 2A. What is heat sink? Explain with diagram, thermal circuit with and without heat sink?
- 2B. Explain the importance of aesthetic and ergonomic in industrial design.
- 2CWhat is Through-Hole mounting? List benefits and drawback of it.

(4+3+3)

- 3A. Why is thermal management necessary? Explain different cooling methods in electronic systems?
- 3B. What are benefits and drawback of SMD?
- 3C. What is control panel? Explain its organization.

(4+3+3)

- 4A. Explain false signals with waveform. How it effects electronic products?
- What is CSP? Write benefit and drawback of CSP? 4B.
- 4C. What is digital noise? List the digital noise sources.

(4+3+3)

- 5A. Define reliability in product design and its types? With neat graph, explain failure rate curve?
- 5B. What is product life cycle? Explain with neat diagram.
- 5C. What is grounding? Explain different ground systems with suitable diagram and mention their advantages and disadvantages.

(4+3+3)

MAX. MARKS: 50