Total No. of Questions : 12]

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SEAT No. :

[**Total No. of Pages : 3**

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B.E. (E & TC)

ELECTRONIC PRODUCT DESIGN

(2008 Pattern) (Semester - I)

Time : 3 Hours]   *[Max. Marks :100*

Instructions to the candidates:

1) *Answer any 3 questions from each Section.*
2) *Answers to the two sections should be written in separate books.*
3) *Neat diagrams must be drawn wherever necessary.*
4) *Figures to the right indicate full marks.*
5) *All questions carry equal marks.*
6) *Your answers will be valued as a whole.*
7) *Use of logarithmic tables slide rule. Mollier charts, electronic pocket calculator and steam tables is allowed.*
8) *Assume Suitable data, if necessary.*

SECTION-I

Q1) a) What is failure rate? Explain with Both tub Curve. **[10]**

b) What are different types of environmental conditions of testing of an electronic product? Explain. **[8]**

OR

Q2) a) Explain in brief.

i) MTBF ii) MTTF iii) Reliability **[6]**

b) What are the basic ergonomics requirement for product design. **[12]**

Q3) a) What are the technocommercial feasibility of a product? Discuss in details with examples. **[10]**

b) Explain in brief grounding, shielding & noise reduction techniques for electronic Circuits. **[6]**

OR

Q4) a) What are the factors to be considered while designing high speed PCB design. **[10]**

b) Explain important considerations for EMI/EMC in designing PCB. **[6]**

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Q5) a) What are different types of packages used for ICS & VLSI based Packages? **[10]**

b) Explain in brief protection circuits **[6]**

i) MOV   ii) TVS or Transzorb.

OR

Q6) a) What is the need of Instrumentation Amplifier in electronic product design? State its Specifications & applications. **[8]**

b) What are different types of Input/Output devices interfaced with Microcontroller(8051). **[10]**

SECTION-II

Q7) a) What is touch screen? Explain with diagram working of Capacitance touch screen ? State its Specifications & applications. **[10]**

b) Compare single layer & double layer PCB's **[6]**

OR

Q8) a) What are different types of Hardware testing (equipments) instruments. Explain any two of the following **[10]**

i) Spectrum Analyzer   ii) Mixed signal Oscilloscope

iii) Digital Phosphorous Oscilloscope   iv) Logic Analyser

v) DSO

b) What is signal integrity? Explain. **[6]**

Q9) a) A 4-channel temperature data logger has the following components. **[10]**

i) 2-RTD's   ii) 2-thermocouples   iii) Signal

Conditioning ADC, µc & 4-digit multiplexed LED display & data memory. Explain in detail how will you design a software for the data logger using any approach.

b) What are different types of software tools used for electronic product design & development? Explain in brief. **[6]**

OR

Q10) a) Explain in brief, **[8]**

i) Assembler   ii) Compiler
iii) Emulator   iv) Simulator

State its limitations.

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b) Explain in brief following protocols & buses used in µc based product design. **[8]**

    i)   I2C   ii)   RS-232

*Q11)*a) What is PLL? Explain with block diagram working of Digital PLL. State its advantages over Analog PLL. **[10]**

    b) What is interleaving? Explain. **[8]**

<div align="center">OR</div>

*Q12)*a) What is graphic equalizer? Explain with circuit diagram working of 5-band Graphic equalizer. State its advantages. **[10]**

    b) What is Bill of Material? Explain with diagram how will you prepare a BOM for simple power Supply. **[8]**

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