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Total No. of Questions : 12] **SEAT No. :**

P2081 **[Total No. of Pages : 3**

B.E. (Semester - I)

ELECTRONIC PRODUCT DESIGN

(2008 Pattern)

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

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate answer books.***
2) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10, Q11 or Q12 from each section.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right side indicate full marks.***
5) ***Use of calculator is allowed.***
6) ***Assume suitable data if necessary.***

SECTION - I

Q1) a) Explain the concept of reliability with Bathtub curve. Explain the terms MTBF and MTTF. **[10]**

b) Explain how the environmental conditions affect the reliability of any instrument or system. **[8]**

OR

Q2) a) Explain how ergonomic & aesthetic design considerations are taken care in case of digital multimeter. **[6]**

b) Explain different reliable soldering practices. State their advantages and limitations. **[6]**

c) State the various design considerations for microprocessor based system. **[6]**

Q3) a) What are the various factors affecting choice of Op-amp in signal conditioning applications. **[8]**

b) Explain important specifications of ADC and DAC from design point of view. **[8]**

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OR

Q4) a) Explain the need of V_{REF} in ADC. Explain the factors to be considered while selecting V_{REF}. Discuss on error budget depending upon V_{REF} and number of output bits. **[8]**

b) Explain the need of instrumental amplifier in analog signal conditioning. Explain errors occuring in instrumentation amplifier. **[8]**

Q5) a) Explain working principal of analog resistive touch screen. Interface 4 wire resistive touch screen with microcontroller. **[8]**

b) Explain the selection of microcontroller to particular application on the basis of **[8]**

i) IO Pins

ii) Counters

iii) RAM & ROM

iv) Type of architecture

OR

Q6) a) Explain I^2C and SPI protocols with applications and limitations. **[8]**

b) With neat diagram explain how to interface keyboard & LCD with microcontroller. **[8]**

SECTION - II

Q7) a) Explain different factors affecting the choice between Assembly Language and High Level Language. **[10]**

b) Explain how In-Circuit Emulator is used in software development. **[8]**

OR

Q8) a) Explain in details Waterfall model of software design. **[10]**

b) Write notes on : **[8]**

i) Compiler

ii) Assembler

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Q9) a) List the EMI/EMC considerations in PCB designing. Explain how you will minimize the spreading of RF in multilayer PCB. **[8]**

b) What are the issues to be considered in ensuring signal integrity in high speed circuits? **[8]**

OR

Q10) a) What is requirement of shielding and guarding in electronic products? Explain different types of the same. **[8]**

b) Explain different design considerations in the design of PCBs for high speed digital circuits. **[8]**

Q11) a) With the help of block diagram, explain the implementation of radio link. **[10]**

b) Write a short note on : **[6]**

i) Phase Locked Loop

ii) Interleaver

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OR

Q12) a) Explain with reasons the selection of particular band of frequency spectrum for various communication applications. **[10]**

b) Write short notes on : **[6]**

i) Transmitter / Receiver Sensitivity

ii) Bit and Symbol error rates

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