Total No. of Questions : 12]

SEAT No. :

P1405

[Total No. of Pages : 4

[4759]-110
B.E. (Electronics)
ELECTRONICS SYSTEM DESIGN
(2008 Course) (Semester - I) (404201)

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

Instructions to the candidates:

1) ***Answer three questions from section I and three questions from section II.***
2) ***Answer to the two sections should be written in separate books.***
3) ***Figures to the right indicate full marks.***
4) ***Use of electronic pocket calculator is allowed.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Discuss in detail the different stages of electronic product development. Explain the implication of skipping a particular stage in development. **[8]**

b) Define and explain the following terms in mathematical way. **[8]**

i) MTBF

ii) MTTF

iii) Failure Rate

iv) Reliability

OR

Q2) a) Explain the bath tub curve for reliability indicating all its regions. Also explain how failure rate can be reduced in different regions of bathtub curve. **[8]**

b) Estimate reliability of a linear power supply with component as given in following table **[8]**

P.T.O.

Components	Failure Rates hours for 10^{-6} hours
Power transformers(1)	4.4
Rectifier Diods(4)	0.2
Filter Capacitors (2)	0.3
Ceramic Capacitors (2)	0.3
Semiconductor Diodes (2)	0.2
Regulator IC (2)	0.6
Linear IC (2)	0.6
Resister (4)	0.2

Q3) a) Explain following terms for ADC & DAC. **[8]**

i) Resolution

ii) Full scale o/p voltage

iii) Accuracy

iv) Linearity

b) In analog signal conditioning what are the different factors affecting choice of opamp. **[8]**

OR

Q4) a) Explain instrumentation amplifier with it's different specifications. **[8]**

b) Explain error budget analysis with one example of an electronic product. **[8]**

Q5) a) Explain working principle of analog resistive touch screen. Interface 4-wire resistive touch screen with any microcontroller. **[10]**

b) Explain following buses & Protocols. **[8]**

i) RS-232

ii) RS-485

iii) I2C

iv) SPI

OR

Q6) a) What are the different factors for the selecting a particular microcontroller for any application. **[10]**

b) What are the different LED configurations? Give suitable example for the same. **[8]**

SECTION - II

Q7) a) Explain Debugger tools & techniques for software in detail. **[8]**

b) What are the different factors affecting on the choice between Assembly & High Level language? **[8]**

OR

Q8) a) Explain following approaches in development of application software for electronic product. **[12]**

i) Top-Down approach

ii) Bottom-Up approach

iii) Modular Programming

iv) Water fall Model

b) What are the features of simulators? **[4]**

Q9) a) Define crosstalk? What should be the remedy to minimize crosstalk? **[8]**

b) What are the testing standards for EMI/EMC? **[8]**

OR

Q10)a) What is the signal integrity? Justify the significance of SI. How can it be ensure in high-speed circuits? **[8]**

b) Explain different design consideration while designing PCB for high speed digital circuits? **[8]**

Q11)a) Explain environmental testing? What is the need of environmental testing? What are the different factors needed to be test while environmental testing. **[12]**

b) What are the compliances for the EMI/EMC? **[6]**

OR

Q12)a) What are the features & limitations of analog CRO, DSO, Logic Analyzer & Mixed signal Oscilloscopes in finding hardware / software faults? **[12]**

b) Define transient Sensitivity & Monte Carlo? **[6]**

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