Total No. of Questions : 12]

SEAT No. :

P1384

[Total No. of Pages : 4

[4759]-86

B.E. (E & TC)

ELECTRONICS PRODUCT DESIGN

(2008 Pattern) (Semester - I) (Theory)

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

Instructions to the candidates:

1) ***Aswers to the two sections should be written in separate answer books.***
2) ***Answer Q 1 or Q 2, Q 3 or Q 4, Q5 or Q 6, Q7 or Q 8, Q 9 or Q 10, Q 11 or Q 12 from each section.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Use of calculator is allowed.***
6) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Discuss in details different stages of an electronic product development. **[12]**

b) Find MTBF & MTTF **[6]**

Stage	Components	Type	Qty	Fr x 10^{-6}hr
Transformer	Winding	Stepdown	01	4.4
Rectifier	Diodes	Si type	04	0.2
Filter	Capacitor	Electrolytic	02	0.3
Regulator	Capacitor	Ceramic	02	0.3
	Diode	Semiconductor	02	0.2
	Linear IC	ICLM317	02	0.6
Display	Linear	IC 7107	02	0.6
	Resistors	Carbon Camp	04	0.2

OR

P.T.O.

Q2) a) Explain the Bath tub curve. **[6]**

b) Explain the following terms in context with reliability of an electronic product. **[6]**

i) MTTF

ii) MTBF

iii) MTTR

iv) Failure rate

c) With the help of block schematic explain in brief the factors affecting reliability of product. **[6]**

Q3) a) Compare at least four types of ADCs w.r.t. parameters missing codes, differential & integral nonlinearity, resolution & power consumption. **[12]**

b) What is need of decoupling capacitor where it is located in the circuit. **[4]**

OR

Q4) a) Draw a circuit of instrumentation amplifier & explain gain equation with derivation. Explain its parameters slew rate, CMRR, bandwidth, offset. **[10]**

b) Compare a least two DAC techniques with their selection criteria. **[6]**

Q5) a) What are fectors affecting selection of buses & protocols in high speed electronic product. **[8]**

b) Draw typical wiring diagram for each interface Rs 485, Rs 432 I2C. Also state how many maximum device can interface with these buses. **[8]**

OR

Q6) a) Explain the different requirement of interfacing touch screen. What are the different touch screen available? Explain typical interfacing technique with example. **[8]**

b) What are different factors for selecting a particular micro controller for application. **[8]**

SECTION - II

Q7) a) Mention factors affecting choice between assembly & high level language. **[8]**

b) Explain different software debugging techniques. **[8]**

OR

Q8) a) Give some details of documentation practices & templates for assembly & C language? **[8]**

b) Explain different approaches to develop an application software for electronic product. **[8]**

Q9) a) Explain different design considerations while designing PCB for high speed digital circuits. **[10]**

b) Estimate the parasitic values for following geometrics of PCB track. **[8]**

i) Resistance of 20cm long copper track with 0.8mm width on standard 35 micron copper clad laminate [Resistivity of copper 1.72×10^{-6}rm].

ii) Inductance of track having width 1mm length 25cm & thickness 70 microns.

OR

Q10)a) State & explain the causes of losses along transmission lines. Explain circuitary required to overcome attenuation problems. **[10]**

b) Explain: **[8]**

i) Ground loops.

ii) Star grounding.

iii) Board level shielding.

iv) Guarding.

Q11)a) Explain selection criteria of frequency bands in various applications. Also mention reason for selecting particular band for application. **[8]**

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

i) Equalizer

ii) Interleaver

OR

Q12)a) What is communication link analysis explain various sources of signal loss & noise. **[8]**

b) Write a notes on EMI & EMC standards. **[8]**

EEE