

B-E (LTPx) VIII Pm  
Advance VLSI Design

24/11/12

49 : 2nd half-12-(h) JP

Con. 9126-12.

(REVISED COURSE)

KR-4398

(3 Hours)

[ Total Marks : 100

**N.B.:** (1) Question No. 1 is **compulsory**.

(2) Solve any **four** questions from remaining **six** questions.

(3) Draw neat **diagrams** and assume suitable data if **required**.

1. (a) What do you mean by clock skew and clock jitter. 5  
(b) State the need of input and output circuit with their neat diagrams. 5  
(c) What are PVT variations and how does PVT affect integrated circuit. 5  
(d) Analog circuit design is difficult as compared to digital circuit design. Justify. 5
2. (a) What is Elmore delay model. What is the effect of interconnect parasitics on delay ? 10  
How delay can be reduced ?  
(b) Discuss to concept of charge sharing and explain how it affects reliability of 10  
integrated circuit.
3. (a) Give and explain to single phase clock system and explain its drawback. 10  
(b) Discuss dynamic CMOS logic. Compare it with static CMOS logic. What is to primary 10  
drawback of dynamic CMOS logic. Show to modifications in dynamic CMOS logic  
to overcome its drawback.
4. (a) Show to implementation of four bit carry look ahead adder along with all to equations. 10  
(b) Draw and explain Manchester carry out circuit using carry kill bit. Also draw k- 10  
input dynamic Manchester carry chain circuits.
5. (a) Draw schematic for 6T SRAM cell and explain its stability criteria. Also draw and 10  
discuss its butterfly curve.  
(b) Discuss in programming techniques of EEPROM in detail. 10
6. (a) Draw and explain clock generation and stabilization network. Also explain how this 10  
clock is distributed in integrated circuit.  
(b) Draw and explain MOS based two stage amplifier. Also discuss how frequency 10  
compensation can be achieved.
7. Write short notes on any **four** :— 20
  - (a) DRAM and refresh logic
  - (b) Switch capacitor circuit
  - (c) Cross talk in integrated circuits
  - (d) Interconnect scaling
  - (e) Metal migration in interconnect.

30/11/2012

B.E (ETAX) Sem VIII (Rev)  
Robotics & Automation

132-p3-d-upq5H K112 B

Con. 9135-12.

(REVISED COURSE)

KR-4614

(3 Hours)

[Total Marks : 100

N.B. : (1) Question No. 1 is compulsory.

(2) Attempt any four questions from remaining six questions.

(3) Assume suitable data wherever necessary.

1. (a) Define ROBOT and explain applications of Robotics in details. 5  
(b) Mobile frame "m" is rotated about 'f' by an angle  $\theta = \frac{\pi}{3}$  radians. 5  
The co-ordinates of point "p" with respect to mobile frame are  $[p]^m = [-2, 0, 3]^T$ .  
Find the Co-ordinates of Point "P" with respect to fixed frame "F".  
(c) Define shrink and swell operators. 5  
(d) Write specifications of PLC. 5
2. (a) Explain the four fundamental operations for transferring frame (k-1) to frame "k" and obtain  $T_{(k-1)}^k$  transformation matrix. 10  
(b) What is Direct Kinematic Problem ? Explain D-H-algorithm in details by giving suitable example. 10
3. (a) Explain Inverse Kinematic Problem and State different methods to solve Inverse Kinematic problem in brief. Also explain significance of TCV vector. 10  
(b) Develop Inverse Kinematic (IK) analysis of 2 axis planer articulated Robot. 10
4. (a) Explain Template Matching in details with the help of algorithm. 10  
(b) What are moments of an Image ? Explain shape analysis in details with respect to Robot Vision. 10
5. (a) What is Trajectory Planning ? Explain in details by giving suitable examples. 10  
(b) What are Parabolic blends ? Why they are introduced ? Why such bending is done in Trajectories ? 10
6. (a) Explain the workspace analysis of 5 axis Rhino XR-3 Robot arm. 10  
(b) Explain Block diagram of PLC system and briefly explain communication ports used in PLC. 10
7. (a) Draw a ladder diagram for a 3 motor system with the following conditions : 12  
Motor 1 ( $M_1$ ) starts as soon as the start switch is ON; after 10 seconds, ( $M_1$ ) goes OFF and Motor 2 ( $M_2$ ) starts. After 5 seconds ( $M_2$ ) goes OFF and Motor 3 ( $M_3$ ) starts. After 10 seconds, ( $M_3$ ) goes OFF,  $M_1$  starts and the cycle is repeated.  
(b) Why Triangulation is used ? Explain in details. 8

05/12/12

Advanced networking technology

VIII / R / Electronics / R

25 : 2nd half, 12-shilpa(e)

Con. 9997-12.

(REVISED COURSE)

KR-4950

(3 Hours)

[Total Marks : 100

- N.B. :** (1) Question No. **1** is **compulsory**.  
(2) Answer any **four** out of remaining **six** questions.

1. Answer the following :- 20
  - (a) Explain BSS and ESS as defined by 802.11 and also explain how 'hidden station' problem is overcome in 802.11.
  - (b) Compare Frame relay and ATM.
  - (c) Bring out the salient differences between TCP/IP and OSI Model.
  - (d) What is the need for fragmentation in IPV4 ? How is it implemented ? Explain with an example.
  
2. (a) Explain IPV4 datagram format in detail. What are the strategies for transition from IPV4 to IPV6 ? Explain. 10  
(b) For the following Network Components, bring out the functions of each : Hubs, Repeaters, Bridges Switches, Routers. 10
  
3. (a) Briefly explain subnetting and superntting, with an example. How do the subnet mask and supernet mask differ from a default mask in classful addressing ? 10  
(b) Explain the steps for completing the Access-Network design in detail. 10
  
4. (a) Differentiate between CSMA/CD and CSMA/CA. Why CSMA/CD is not implemented in WLAN ? With a neat process flow-chart, explain how CSMA/CA is implemented in WLAN. 10  
(b) Explain ATM cell format. Also describe the different functional layers of ATM and bring out the significance of AAL layer. 10
  
5. (a) Explain DWDM technology with a neat schematic diagram of DWDM architecture, bringing out the main functions of the DWDM system components. 10  
(b) Describe frame format of Frame Relay and explain how congestion control is implemented in frame relay. 10
  
6. (a) What is a firewall ? What are the capabilities and limitations of firewall ? Explain different types of firewalls, their advantages and weaknesses. 10  
(b) Explain the different security threats and safeguards. 10
  
7. Write short notes on :- 20
  - (a) RMON
  - (b) SONET functional Layers
  - (c) Differences between IPV4 and IPV6
  - (d) Layer - 7 filtering.

11 / 10

B.E VIII Sem EPR  
 Embedded Syst. &  
 Real Time Sys.  
 (REVISED COURSE)

19-03-04-04-SH-RSL12 C

Con. 10244-12.

KR-5229

(3 Hours)

[Total Marks : 100

- N.B.** (1) Question No. 1 is compulsory.  
 (2) Answer any **four** out of remaining **six** questions.  
 (3) **All** questions carry **equal** marks.

- |    |  |    |
|----|--|----|
| 1. | (a) Differentiate between RS232 and RS485.   | 5  |
|    | (b) Explain CAN features and protocol.   | 5  |
|    | (c) Draw MSP 430 Architecture and write its specifications.  | 5  |
|    | (d) Differentiate between RISC and CISC processors.  | 5  |
| 2. | (a) Compare schedulers used in hard real time systems.   | 10 |
|    | (b) An Embedded system with task IDS T1, T2, T3 with estimated completion time 12, 6, 8 milliseconds and priorities 1, 3, 2 (0-highest priority, 3-lowest priority) respectively moves to 'Ready' queue together. A new task T4 with estimated completion time 5ms and the priority '0' enters the 'Ready' queue after 4ms of start of execution of T1. Assume all the tasks contain only CPU operation. Calculate the waiting time and Turn Around Time for each task and the average waiting time and Turn Around Time using priority based pre-emptive algorithm. | 10 |
| 3. | (a) List and explain Hardware and Software tools of an Embedded System.  | 10 |
|    | (b) Explain various programming modeling techniques used in Embedded system design.  | 10 |
| 4. | (a) Explain with suitable example the following challenges meet by an Embedded System designer.  | 12 |
|    | (i) Execution Performance  |    |
|    | (ii) Power Consumption   |    |
|    | (iii) Time to market   |    |
|    | (iv) Memory Space  |    |
|    | (v) Debugability   |    |
|    | (vi) Cost.   |    |
|    | (b) Explain classification of Embedded system with suitable examples.  | 8  |
| 5. | (a) Explain why ARM processor is one of the most commonly used 32 bit embedded processor. Draw architecture of ARM7TDMI processor.   | 10 |
|    | (b) Explain various operating modes of the ARM7 processor.   | 10 |
| 6. | (a) What is shared data problem ? Explain different types of semaphores.   | 10 |
|    | (b) Explain the register set of MSP430 RISC controller.  | 10 |
| 7. | Write short notes on :-  | 20 |
|    | (a) Different states of the task   |    |
|    | (b) Digital signal controller  |    |
|    | (c) Interprocess communication   |    |
|    | (d) Serial peripheral Interface.   |    |