**SIDDHARTH INSTITUTE OF ENGINEERING AND TECHNOLOGY :: PUTTUR**
**(AUTONOMOUS)**

Siddharth Nagar, Narayanavanam Road – 517583

**QUESTION BANK (DESCRIPTIVE)**

**Subject with Code :** HSCD (16EC5508)     **Branch & Specialization**: ECE & VLSI

**Year & Sem:** I-M.Tech & I-Sem

## UNIT –I

## CO-DESIGN ISSUES & CO-SYNTHESIS ALGORITHMS

1.  a) Which block diagram explains a generic co-design methodology?          [5M]

    (b) Write different languages used in co-design.          [5M]

2. (a)What are the different types of co-design models & architectures?          [5M]

    (b)What are the different types of languages and architectures?          [5M]

3. (a) What is meant by software co-design? Explain the co-design models.          [5M]

    (b) List the different blocks in VLIW architecture and explain. .          [5M]

4. (a) What is meant by co-synthesis? Describe the distribution system co-synthesis.          [5M]

    b) Discuss about RISC and CISC architectures.          [5M]

5. (a) Explain FSMD architecture in detail.          [5M]

    (b) Explain about finite state machine.          .          [5M]

6. (a) Discuss about Distributed system co-synthesis.          [5M]

    (b) Explain about Hardware-software partitioning.          [5M]

7. a) What are the prototyping and emulation techniques? Discuss them briefly.          [5M]

    (b) Discuss the architecture for control dominated systems.          [5M]

8. (a) Explain about hardware – software partitioning.          [5M]

    (b)  Discuss about performance analysis in distributed system co synthesis.          [5M]

9.  (a) Discuss the future developments in emulation and prototyping.          [5M]

    (b) Write a note on component specialization techniques.          [5M]

10. (a) Write the importance of hardware-software partitioning. Explain its performance

    estimation.          [5M]

    (b) Explain Vulcan methodology in hardware-software partitioning.          [5M]

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**UNIT-II**

**PROTOTYPING AND EMULATION & TARGET ARCHITECTURE**

1. (a) Write a short note on system communication infrastructure.                    [5M]

   (b) What are the architecture specialization techniques of emulation and prototyping?     [5M]

2. (a) Explain in detail about prototyping and emulation techniques.          [5M]

   (b) Discuss about prototyping and emulation environments.          [5M]

3. What is meant by emulation technique? Explain it with an example.      [10M]

4. (a) Analyze zycad paradigm RP & XP.          [5M]

   (b) List different future developments in emulation.          [5M]

5. Write short note on a) Component specialization technique.          [5M]

   b) System specialization techniques.          [5M]

6. (a) Explain the following: (i) Target architecture. (ii) Application system classes.     [5M]

   (b) What are mixed systems? Explain it with an example.          [5M]

7. (a) Explain the architecture of control dominated system.          [5M]

   (b) Discuss about mixed system.          [5M]

8. (a) Discuss about the architecture for data dominated systems.          [5M]

   (b). what are the different architecture specialization techniques? Explain in detail.     [5M]

9. Describe the architecture for ADSP21060, TMS320C60 data dominated systems.     [10M]

10. (a) Write in detail about need for software development for embedded architecture.     [5M]

   (b) Explain about the requirements of modern embedded system.          [5M]

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## UNIT –III

## COMPILATON TECHNIQUES AND TOOLS FOR EMBEDDED PROCESSOR

1. (a) With neat diagram explain the modern embedded system.                          [5M]

   (b) Write the advantages of modern embedded systems.                          [5M]

2. (a) What are the different compilation techniques? Explain in detail.                  [5M]

   (b) What are the special features of modern embedded architecture?          [5M]

3. What is a compiler development environment? Explain it with a suitable circuit.      [10M]

4. (a) Explain the co-design computational model.                          [5M]

   (b) Distinguish between design specialization and verification.                  [5M]

5. a)  What are the embedded software development needs?                      [5M]

   (b)  What are the tools required for embedded processor architecture?          [5M]

6. (a) Describe the problems occurred when adapting traditional compilation model to embedded
       Processor.                                          [5M]

   (b) Discuss about MMDSP processor.                          [5M]

7. (a) Explain principal set of design tools for embedded processor system.          [5M]

    (b) List the practical considerations in a compiler development environment.      [5M]

8. (a)  What is the need for embedded software development?                  [5M]

   (b) Write a short note on compilation techniques.                      [5M]

9. Write short note on modern embedded architectures.

        a) Architectures in multimedia.                          [5M]

        b) Wireless communications.                          [5M]

10.  Write about practical considerations in a compiler development environment.

        a)   Source level debugging.                          [5M]

        b)   Compiler validation.                              [5M]

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## UNIT-IV

## DESIGN SPECIFICATION AND VERIFICATION

1. (a) Explain the concurrency coordinating concurrent computations.          [5M]

   (b) What are the different verification tools? Explain about the interface verification.          [5M]

2. (a) What is meant by interface verification?          [5M]

   (b) Explain about any one of the verification tools.          [5M]

3. Explain any two system level specification languages with a suitable example.          [10M]

4. (a) What are the system level specifications?          [5M]

   (b) Discuss about design representation for system level synthesis.          [5M]

5. (a) Describe the following concepts: (i) Design verification. (ii) Implement verification.          [5M]

   (b) Differentiate design and co-design.          [5M]

6. (a) Write short notes on interfacing component.          [5M]

   (b) What is meant by coordinating concurrent computations? Explain.          [5M]

7. Explain about design verification and implementation verification.          [10M]

8. (a) Explain co-design computational model.          [5M]

   (b) Discuss in detail about design verification co-design.          [5M]

9. (a) What is meant by co-design? Explain the co-design computational model.          [5M]

   (b) How is design verification carried out?          [5M]

10. Explain about concurrency in design specifications and verification.

    a) Non determinism.          [5M]

    b) Synchronous and asynchronous computations.          [5M]

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## UNIT-V

## LANGUAGES FOR SYSTEM LEVEL SPECIFICATION AND DESIGN –I & II

1. (a) Explain the design representation for system level synthesis.          [5M]

    (b)  Discuss the system level specification languages.          [5M]

2. (a) Discuss the multi-language co-simulation lycos system.          [5M]

    (b) What are the different heterogeneous specifications?          [5M]

3.  What is meant by a) cosyma systems and          [5M]

                b) lycos system explain in detail?          [5M]

4. (a) What is meant by design specification? Discuss about co-design.          [5M]

    (b). Write short notes on Compilation technologies.          [5M]

5. (a) What are the difficulties with the design of heterogeneous hardware/software systems? [5M]

    (b) Explain about ESMD representation.          [5M]

6. (a) What are the system level specifications?          [5M]

    (b) Discuss about design representation for system level synthesis.          [5M]

7. (a) Discuss the multi-language co-simulation 'The Cosyma System'.          [5M]

    (b) Explain homogeneous system level specification in detail.          [5M]

8. (a)  What are the new trends in COSMA system?          [5M]

    (b) Discuss how design representation for system level synthesis is done.          [5M]

9. (a) List out the features of multi-language co-simulation.          [5M]

    (b) What do you mean by 'Hardware – Software Partitioning'? Explain.          [5M]

10. Discuss about the need for synthesis and explain about system level synthesis for design

    representation.          [10M]

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