

Code No: R1641052

**R16**

**Set No. 1**

**IV B.Tech I Semester Regular Examinations, October/November - 2019**  
**SOFTWARE ARCHITECTURE AND DESIGN PATTERNS**  
(Computer Science and Engineering)

**Time: 3 hours**

**Max. Marks: 70**

*Question paper consists of Part-A and Part-B*

*Answer ALL sub questions from Part-A*

*Answer any FOUR questions from Part-B*

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**PART-A(14 Marks)**

1. a) What do you mean by Software Architecture? [2]
- b) Compare between Planned and Unplanned Evaluation. [2]
- c) List the essential elements of Design Pattern. [3]
- d) List the known uses of Adapter. [3]
- e) Define Chain of Responsibility. [2]
- f) What do you mean by World Wide Web? [2]

**PART-B(4x14 = 56 Marks)**

2. a) Explain the Architecture Business Cycle in detail. [7]
- b) List and explain the must have common quality attributes of a Software Architecture. [7]
3. a) What is CBAM? Elaborate in detail. [7]
- b) List and discuss the factors for Evaluating Architecture. [7]
4. a) Name the patterns along with their intents that are included in the catalog of Design Pattern. [7]
- b) How would you select and use Design Patterns? Explain briefly. [7]
5. a) Describe the implementation and Structure of Bridge design pattern [7]
- b) Explain the Intent, Structure, Participants and related patterns of Proxy pattern. [7]
6. a) Describe in detail about Interpreter Design pattern. [7]
- b) Write about the useful technique for implementing State Design pattern. [7]
7. a) Explain Air Traffic Control – a case study in designing for high availability. [7]
- b) Explain Multiple Look-and-Feel Standards in detail. [7]



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**Set No. 2**

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**Max. Marks: 70**

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*Answer ALL sub questions from Part-A*  
*Answer any FOUR questions from Part-B*  
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**PART-A(14 Marks)**

1. a) List the factors which affect the influence on Software architecture. [2]
- b) Draw the diagram for context of CBAM. [2]
- c) Define Design Pattern. [3]
- d) List any two participants of Bridge structural pattern. [2]
- e) Write any two applications of Template method Design pattern. [3]
- f) How to analyze the requirements for a case study? [2]

**PART-B(4x14 = 56 Marks)**

2. a) Explain Reference Models and Reference Architectures in detail. [7]
- b) Explain about Quality Attributes and Architectural means for achieving quality. [7]
3. Explain the product lines architecture and discuss the reasons that makes software product lines difficult. [14]
4. a) Explain the Structure and implementation of Abstract Factory creational Pattern. [7]
- b) Summarize the Builder Creational Pattern in detail. [7]
5. a) Explain the Adapter Design pattern in detail. [7]
- b) Explain with an example how Flyweight Design pattern can be implemented. [7]
6. a) Explain the Intent, Motivation, Structure, Participants and Implementation of iterator Design Pattern. [7]
- b) State the consequences and implementation of Chain of responsibility behavioral pattern. [7]
7. a) Explain the World Wide Web - a case study in Interoperability. [7]
- b) How the A-7E Process Structure Achieves Quality Goals? Explain. [7]



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**Max. Marks: 70**

*Question paper consists of Part-A and Part-B*  
*Answer ALL sub questions from Part-A*  
*Answer any FOUR questions from Part-B*

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**PART-A(14 Marks)**

1. a) Define Static Quality Attributes. [2]
- b) State the Participants of ATAM. [3]
- c) List the intents of Creational pattern. [2]
- d) Sketch the Structure of Façade Design Pattern. [3]
- e) When to use a Mediator design pattern? [2]
- f) List any two Constraints of document structure. [2]

**PART-B(4x14 = 56 Marks)**

2. a) Write a note on Hybertsson's three views for software architecture. [7]
- b) Explain Documenting software architectures, Reconstructing Software Architecture. [7]
3. Draw the process flow diagram for the Cost Benefit Analysis Model (CBAM) and discuss the case study of NASA ECS project. [14]
4. a) Explain the applicability, participants and consequences of Abstract Factory creational Pattern. [7]
- b) Describe the patterns role in solving design problems. [7]
5. a) Explain the implementation and Structure of Composite design pattern. [7]
- b) Explain with an example how Proxy Design pattern can be implemented. [7]
6. a) Describe in detail about Command Design pattern. [7]
- b) Explain the implementation of memento pattern with a real time example. [7]
7. a) Write about the user operations on Document editor. [7]
- b) Explain about Spelling Checking and Hyphenation. [7]



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**Max. Marks: 70**

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*Answer ALL sub questions from Part-A*  
*Answer any FOUR questions from Part-B*  
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**PART-A(14 Marks)**

1. a) Define Dynamic Quality Attributes [2]
- b) What do you mean by Software Product Line? [2]
- c) List the advantages Design Patterns. [2]
- d) Define Proxy Design Pattern. [3]
- e) When to use STATE pattern? [3]
- f) What is Multiple Window Systems? [2]

**PART-B(4x14 = 56 Marks)**

2. a) Describe the role of Software Architect. [7]
- b) Explain Software Architecture business life cycle and Architectural patterns. [7]
3. a) How software architecture can control the future of software. [7]
- b) Explain the roles and responsibilities involved in ATAM evaluation. [7]
4. a) With neat sketch explain Factory Method creational Pattern Structure. [7]
- b) Discuss in detail about Singleton creational pattern. [7]
5. a) Explain the Intent, Structure, Participants and related patterns of Bridge design pattern. [7]
- b) Describe Bridger and Adapter Design patterns with an example each. [7]
6. a) Explain the Structure, Participants and Implementation of Strategy Design pattern. [7]
- b) Describe in detail about observer Design pattern with a real time example. [7]
7. a) Write in detail about the three views of Celsius Tech architecture case study [7]
- b) Discuss the Supporting Multiple Look-and-Feel Standards of document editor. [7]

