# INSTITUTE OF AERONAUTICAL ENGINEERING

**(Autonomous)**

**Dundigal, Hyderabad - 500 043**

## COMPUTER SCIENCE AND ENGINEERING

## ASSIGNMENT QUESTIONS

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| **Course Name** | : | **DESIGN PATTERNS** |
| **Course Code** | : | A70530 |
| **Class** | : | IV B. Tech I Semester |
| **Branch** | : | Computer Science and Engineering |
| **Year** | : | 2018 – 19 |
| **Course Faculty** | : | Mr. C. Praveen Kumar, Assistant Professor, CSE<br>Mr. R.M. Noorullah, Associate Professor, CSE<br>Mr. M. Rakesgh, Assistant Professor, CSE<br>Ms. J. Hareesha, Assistant Professor, CSE |

## OBJECTIVES

To meet the challenge of ensuring excellence in engineering education, the issue of quality needs to be addressed, debated and taken forward in a systematic manner. Accreditation is the principal means of quality assurance in higher education. The major emphasis of accreditation process is to measure the outcomes of the program that is being accredited.

In line with this, Faculty of Institute of Aeronautical Engineering, Hyderabad has taken a lead in incorporating philosophy of outcome based education in the process of problem solving and career development. So, all students of the institute should understand the depth and approach of course to be taught through this question bank, which will enhance learner's learning process.

| ASSIGNMENT – I | | | |
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| **S. No** | **Question** | **Blooms Taxonomy Level** | **Course Outcome** |
| **UNIT - I** | | | |
| 1. | Mention advantages of design patterns. Write short notes on use of design patterns. | Remember | 2 |
| 2. | Discuss the MVC architecture in small talk. | Remember | 1 |
| 3. | Describe design patterns. | Understand | 1 |
| 4. | Mention different sections of design patterns. Explain about them. | Remember | 2 |
| 5. | Name patterns along with their intents that are included in the catalog of design patterns. | Understand | 2 |
| 6. | State and explain the classification of design patterns. | Remember | 1 |
| 7. | List the various ways of organizing the design patterns. | Understand | 3 |
| 8. | Compare inheritance verses parameterized types. | Understand | 4 |
| 9. | Explain the Design patterns relationships. | Remember | 2 |
| 10. | Compare run-time and compile-time structure. | Remember | 2 |

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| 11. | Mention common causes for redesigning of design patterns. | Remember | 2 |
| 12. | Explain the Frameworks in detail. | Understand | 4 |
| 13. | Write about the role of Toolkit in designing pattern. | Understand | 2 |
| 14. | Explain how Delegation is used in design pattern. | Understand | 3 |
| 15. | Describe Catalogs of design patterns. | Remember | 2 |
| **UNIT - II** | | | |
| 1. | Explain the process of recursive composition in building a Document. | Remember | 5 |
| 2. | Elaborate in detail about the 'Glyph' abstract class. | Understand | 6 |
| 3. | Discuss the goals and constraints in choosing an internal representation for a document. | Understand | 6 |
| 4. | Explain partial Glyph class hierarchy with a neat diagram. | Remember | 5 |
| 5. | Describe composition and compositor class relationship with a neat diagram | Remember | 7 |
| 6. | Define formatting. How can the textual analysis problem of document editor be solved using design patterns? | Remember | 8 |
| 7. | Explain builder design pattern with suitable example. | Understand | 5 |
| 8. | Explain about abstracting object creation in detail. | Remember | 6 |
| 9. | Memorize the useful techniques for implementing the abstract factory pattern. | Understand | 7 |
| 10. | Write sample code for abstract factory design pattern. | Remember | 5 |
| 11. | Explain the implementation of abstract factory. | Understand | 5 |
| 12. | Discuss about structure, applicability, participants of abstract factory method. | Understand | 7 |
| 13. | Describe the implementation issues of builder design pattern. | Remember | 5 |
| 14. | Explain the structure of builder design pattern with class diagram and describe the collaboration with a sequence diagram. | Remember | 6 |
| 15. | Describe in detail about how Multiple Window Systems is supported | Understand | 7 |
| **UNIT – III** | | | |
| 1. | Describe the intent, motivation and applications of composite patterns. | Remember | 8 |
| 2. | Discuss the importance of implementation in composite | Understand | 10 |
| 3. | Give the intent, applicability and structure of composite design pattern and explain it. | Understand | 10 |
| 4. | Explain the structure of composite pattern with a class diagram. | Understand | 9 |
| 5. | Describe the consequences of composite design pattern. | Remember | 11 |
| 6. | Explain composite pattern with an example from drawing editor. | Remember | 10 |
| 7. | Sketch the structure of composite pattern. | Remember | 9 |
| **ASSIGNMENT – II** | | | |
| 8. | Explain the structure of decorator design pattern with a class diagram. | Understand | 10 |
| 9. | Draw the structure of façade design pattern with class diagram and consequences. | Remember | 10 |

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| 10. | Derive consequences of flyweight method with its structure | Understand | 9 |
| 11. | Draw structure of flyweight pattern with suitable example | Understand | 11 |
| 12. | Elaborate structure of decorator design pattern with a class diagram | Remember | 10 |
| 13. | Explain the structure of Proxy design pattern with a class diagram. | Remember | 9 |
| 14. | Draw the structure of Adapter design pattern with class diagram and consequences. | Understand | 8 |
| 15. | Define Intent and Consequences of bridge pattern. | Understand | 10 |
| 16. | Describe Façade pattern. | Understand | 10 |
| 17. | Explain decorator pattern. | Remember | 9 |
| **UNIT – IV** | | | |
| 1. | Define the uses of command design pattern and its structure with class diagram. Also explain the implementation issues. | Remember | 12 |
| 2. | Explain the implementation and consequences of command pattern. | Understand | 13 |
| 3. | Mention implementation issues of command pattern with sample code. | Understand | 11 |
| 4. | Explain the collaborations and consequences of command method. | Understand | 12 |
| 5. | Evaluate the interpreter design pattern and discuss the consequences and implementation issues. | Remember | 12 |
| 6. | Discuss the implementation issues of Iterator. | Remember | 13 |
| 7. | Explain structure of mediator design pattern with a class diagram and discuss the collaboration with a sequence diagram. | Remember | 11 |
| 8. | Discuss about intent, motivation, structure, applicability and consequences of a mediator behavioral pattern. | Understand | 12 |
| 9. | Explain the participants, collaborations, implementation and sample code of the mediator pattern. | Remember | 13 |
| 10. | Mention the known uses of memento method. | Understand | 13 |
| 11. | Explain the uses of Chain of Responsibility design pattern and its structure with class diagram. Also explain the implementation issues | Understand | 12 |
| 12. | Elaborate the Observer design pattern and discuss the consequences and implementation issues. | Understand | 11 |
| 13. | Discuss the consequences and implementation issues of memento design pattern. | Remember | 13 |
| 14. | Explain the uses of Iterator design pattern and its structure with class diagram. | Remember | 13 |
| 15. | Mention the known uses of Observer method. | Remember | 11 |
| **UNIT – V** | | | |
| 1. | Explain the implementation issues of Strategy design pattern | Remember | 14 |
| 2. | Mention the implementation issues of observer design pattern | Understand | 14 |
| 3. | Explain how design patterns affect the way object-oriented software is designed | Understand | 16 |
| 4. | Discuss the several ways the design pattern affect the way Object-oriented software is designed. | Understand | 14 |
| 5. | Describe design patterns as a supplement to the existing methods | Remember | 16 |
| 6. | Discuss the history of design patterns. | Remember | 15 |
| 7. | Differentiate Alexander's patterns and Design patterns. | Remember | 14 |
| 8. | Write about the two ways of grouping the patterns according to | Understand | 15 |

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| | Christopher Alexander. | | |
| 9. | Compare and contrast between Abstract Class vs. Concrete Class | Remember | 15 |
| 10. | Discuss about Alexander's pattern languages | Understand | 14 |
| 11. | Describe a briefly history of design patterns | Understand | 16 |
| 12. | Discuss the consequences and implementation issues of Visitor design pattern. | Understand | 16 |
| 13. | Mention about intent, motivation, structure, applicability and consequences of a Template Method behavioral pattern | Remember | 15 |
| 14. | Explain the State design pattern and discuss the consequences and implementation issues. | Remember | 14 |
| 15. | Write the sample code for Template method and Visitor patterns | Remember | 15 |

Prepared by Mr. C. Praveen Kumar, Assistant Professor, CSE

**HOD, CSE**