

**Question Bank**

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**Q. Answer the following Questions**

1. What is load time address?
2. What is assembly language?
3. What is Interpreter?
4. What are Loader design options?
5. Define assembler directive.
6. Differentiate CISC and RISC computers.
7. What is relocation? How it is performed?
8. Define and Explain data structure used in Assembler.
9. What are the advantages and disadvantages of p-code compilers?
10. Explain UltraSPARC architecture for RISC machine.
11. What are macro processor design options?
12. Explain different types of loader in detail.
13. What is program linking? Explain in detail.
14. Explain MS-DOS linker.
15. What is macro preprocessing? Design algorithm for one macro preprocessor.
16. Explain analysis and synthesis phases of a compiler.
17. What is system software? Differentiate system software with application software.
18. What is MASM assembler?
19. Explain Nested macros.
20. What is Interpreter?
21. What is Loader?
22. Explain program blocks
23. Explain RISC in details
24. Write Features of machine-dependent compiler
25. Explain Shift / reduce parsing
26. Explain location counter in assembler.
27. Explain MS-DOS linker and SUN OS linker.
28. Explain in brief N-pass compiler
29. Explain any three assembly directives.
30. Explain various phases of compilation process

- 31.Explain the instruction formats and addressing modes of SIC/XE machine architecture.
- 32.Design algorithm for macro expansion technique.
- 33.Explain syntactic analysis in detail.
- 34.Explain lexical analysis.
- 35.Explain Bootstrap loader.
- 36.How object program can be processed using linkage editor? Explain with diagram.
- 37.What are Literals? Differentiate literals from immediate operands.
- 38.Design a flowchart for two pass assembler.
- 39.What are the algorithm and data structures used for assembler? Explain in detail.
- 40.Explain UltraSPARC architecture for RISC machine.
- 41.Explain machine dependant assembler features.
- 42.What are macro processor design options?
- 43.Explain SIC and SIC/XE architecture in detail.
- 44.Explain in brief basic macro processor function.
- 45.Explain compiler design options in detail
- 46.Explain different types of loader in detail.
- 47.Explain relocation and program linking in detail.
- 48.What are machine independent compiler features?
- 49.Explain lexical analysis.
- 50.Explain program blocks.

**Q. Write short note on following**

1. RISC machines
2. Absolute loader
3. Linkage editor
4. Program relocation
5. MS-DOS Linket
6. YACC compiler
7. ANSI C macro language
8. Basic Compiler functions
9. Dynamic linking
- 10.MASM assembler
- 11.CISC machine
- 12.Bootstrap loader

**MCA Part-I Sem-I**  
**Discrete Mathematical Structure**  
**Question Bank**

**Short Answer Questions:**

- 1) Define the following terms:
  - a) Simple graph
  - b) Adjacent vertices
  - c) Degree of vertices
- 2) State and prove hand shaking lemma.
- 3) Define Algebraic structure.
- 4) Define Group.
- 5) Prove that the fourth roots of unity  $\{1, -1, i, -i\}$  form an abelian multiplicative group.
- 6) Prove that the set  $\{0,1,2,3,4\}$  is a finite abelian group of order 5 under addition modulo 5.
- 7) Let  $G = \{1, -1, i, -i\}$  be a multiplicative group. Find the order of every element.
- 8) Define semigroup and monoid.
- 10) What is a sum and a product rule?
- 11) Three persons enter into car, where there are 5 seats. In how many ways can they take up their seats?
- 12) If  $n_{P_2} = 72$ , Find the value of  $n$ ?
- 13) Discuss the difference between permutation and combination.
- 14) Evaluate the following:
  - i)  $12_{P_7}$
  - ii)  $21_{C_2}$
- 15) Find the generating function of the sequence 1,2,3,4,5, - - - ?
- 16) Prove that every square matrix can be uniquely expressed as the sum of a symmetric and skew-symmetric matrix.
- 17) Find the value of  $\alpha$  so that the equations  $x + y + 3z = 0, 2x + 3y + \alpha z = 0, 2x + y + 2z = 0$  have a non-trivial solution.
- 18) Define the union and intersection of two sets.
- 19) Let  $A = \{1,3,9,27,81\}$ . Draw the Hasse diagram of the poset  $(A, |)$ .

20) Define complete and Modular Lattice.

21) If L be a Lattice, then for every a and b in L

a)  $a \vee b = b$  if and only if  $a \lesssim b$

b)  $a \wedge b = a$  if and only if  $a \lesssim b$

c)  $a \wedge b = a$  if and only if  $a \vee b = b$

22) If L be a Lattice then prove that

i)  $a \wedge (b \vee c) \geq (a \wedge b) \vee (a \wedge c)$       ii)  $a \vee (b \wedge c) \leq (a \vee b) \wedge (a \vee c)$

23) Define the negation of statement with truth table.

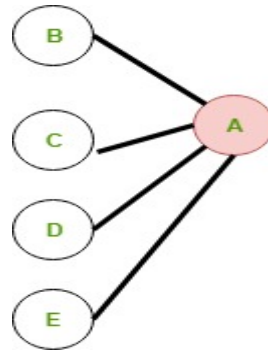
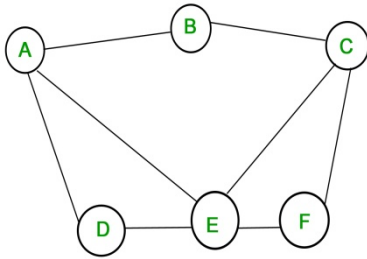
24) Define Quantifiers and Quantified statements.

25) Write the converse and contrapositive of the following statement

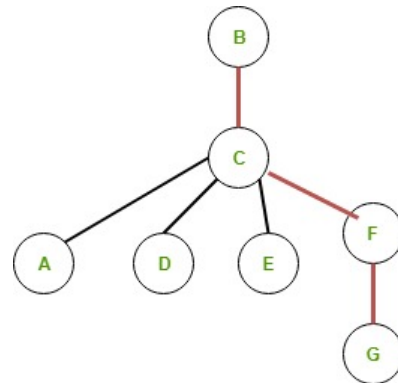
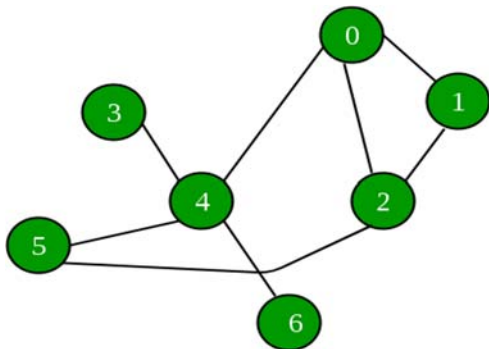
“The number is neither odd nor perfect square”

**Long Answer Questions:**

- 1) In any graph G the number of vertices of odd degree is always even.
- 2) Draw simple graph with 10 vertices and 46 edges.
- 3) Explain regular and bipartite graph with examples.
- 4) Explain the operations on a graph.
- 5) Explain the following terms with examples.
  - a) Walk
  - b) Trail
  - c) Circuits
  - d) Path
  - e) Cycle
- 6) Find the distance and diameter of the graph.



- 7) From the below graph, Find the eccentricity of each of the vertex.



- 8) Explain the following terms with examples.
  - a) Planar graph
  - b) Eulerian graph
  - c) Hamiltonian graph
- 9) Show that the set  $\{1,2,3,4,5\}$  is not group under addition and multiplication modulo 6.
- 10) In how many of the permutations of 10 things taken 4 At a time will
  - a) two things always occur
  - b) never occur

- 11) Explain the permutation of things not all different.
- 12) Prove that  $n_{C_r} + n_{C_{r-1}} = n + 1_{C_r}; 0 \leq r \leq n$ .
- 13) Prove that every square matrix can be uniquely expressed as the sum of a symmetric and skew-symmetric matrix.
- 14) A necessary and sufficient condition for a square matrix A to be invertible is that A is non-singular.
- 15) Prove that,
- The inverse of a matrix is unique.
  - $(AB)^{-1} = B^{-1}A^{-1}$ .
  - $(A')^{-1} = (A^{-1})'$ .
- 16) Solve the system of equations by matrix method  
 $x-2y+z=0, -y+z=-2, 2x-3z=10$ .
- 17) If A,B and C are any sets then
- $A \cup (B \cap C) = (A \cup B) \cap C$
  - $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$
  - $(A \cup B)' = A' \cap B'$
- 18) Explain the following terms with examples.
- Reflexive relation
  - Symmetric relation
  - Transitive relation
  - Anti-symmetric relation
- 19) Explain the following terms with examples.
- Into function
  - onto function
  - one-one function
  - Constant function
- 20) Draw the Hasse diagram of the poset  $(P(S), \subseteq)$  is the power set on  $S = \{a, b, c\}$ .
- 21) If  $(L, \preceq)$  be a lattice then for a,b,c,d in L
- $a \preceq b \Rightarrow a \vee c \preceq b \vee c$
  - $a \preceq b \Rightarrow a \wedge c \preceq b \wedge c$
  - $a \preceq b \text{ and } c \preceq d \Rightarrow a \vee c \preceq b \vee d$
  - $a \preceq b \text{ and } c \preceq d \Rightarrow a \wedge c \preceq b \wedge d$
- 22) Construct the truth table for each of the following statement patterns.
- $p \rightarrow (q \rightarrow p)$
  - $[(p \wedge q) \vee r] \wedge [\sim r \vee (p \wedge q)]$
- 23) Using truth tables, prove the following logical equivalences.
- $(p \wedge q) \equiv \sim(p \rightarrow \sim q)$
  - $(p \wedge q) \rightarrow r \equiv p \rightarrow (q \rightarrow r)$

24) Write the negations of the following

i)  $(p \vee q) \wedge (q \vee \sim r)$     ii)  $(p \rightarrow q) \vee r$     iii)  $(\sim p \wedge q) \vee (p \wedge \sim q)$     iv)  $(p \wedge q) \rightarrow (\sim p \vee r)$

25) Explain the following terms.

i) Tautology    ii) Contradiction    iii) Contingency

26) Explain the following terms.

i) Conjunction    ii) Disjunction    iii) Conditional    iv) Biconditional

# Punyashlok Ahilyadevi Holkar Solapur University, Solapur.

**Subject** : ADBMS  
**Class** : MCA I (SEM-II)

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## **ADBMS Question Bank**

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1. What is database?
2. What is DBMS?
3. What is a Database system?
4. What is the role of Database Administrator ?
5. Disadvantage in File Processing System?
6. Describe the three levels of data abstraction?
7. Define the "integrity rules"
  
9. What is Data Independence?
10. What do you mean by Data processing ?
11. Which part of the RDBMS takes care of the data dictionary? How
12. What do you mean by instance & schema ? Explain the difference between these.
13. What is the difference between Procedural DML and Non-Procedural DML ?
14. What is a view? How it is related to data independence?
15. What is Data Model?
16. What is E-R model?
17. What do you mean by Hierarchical model ?
18. What is an Entity?
19. What is an Entity type?
20. What is an Entity set?



21. What is a composite attribute? Give examples.
22. What is a single valued attribute? Give examples.
23. What is a multi-valued attribute? Give examples.
24. What do you mean by cardinality? What are different kinds of cardinalities ?
25. What is an Extension of entity type?
26. What is the difference between the strong entity set and weak entity set ?
27. Define subtype and supertype entities ?
28. Give example of following relationships :
  - a. Many-to-One
  - b. One-to-One
  - c. One-to-Many
  - d. Many-to-Many
29. What is an attribute?
  
31. What is degree of a Relation?
32. What is Relationship, Relationship set, and Relationship type?
33. What is degree of Relationship type?
34. What is SDL (Storage Definition Language)?
35. What is Data Storage - Definition Language?
36. What is DDL, DCL, and DML (Data Manipulation Language)?
37. What is VDL (View Definition Language)?
  
39. What is Relational Algebra?

43. Differentiate between Cartesian product and natural join operations used in relational algebra.
45. What is a primary key ?
46. Define foreign key ? How does it play a role in the join operation ?
47. What are various Data types in SQL ?
48. What do you mean by SQL ?What are the characteristics of SQL ?
49. Explain Triggers and its types with examples.
50. Distinguish between static and dynamic SQL.
51. What is meant by static SQL? How it differs from dynamic SQL?
52. How are the nulls represented in database system?
53. What are aggregate functions?
54. What is the purpose of group by clause in the SELECT statement?
55. What are views? How they are created?
56. What do you mean by integrity constraints ?
57. Which subdivision of SQL is used to put values in tables and which one to create tables ?
58. Differentiate between SQL commands DROP TABLE and DROP VIEW.
59. What is the difference between WHERE and Having Clause ?
60. Discuss the various type of join operations ? Why are these join required.
61. How are exceptions handled in PL/SQL? Give some of the internal exceptions' name
62. What are stored-procedures? And what are the advantages of using them.
63. What are cursors give different types of cursors.
64. What is normalization?
65. What are Armstrong rules? How do we say that they are complete and/or sound
66. Explain the codd's rules for relational database design.
67. Explain Functional dependency and Trivial functional dependency with examples.
68. Explain the term Distributed DBMS and Client-Server DBMS
69. Define the relational data model.
70. What is Functional Dependency?
71. What do you mean by redundancy ?How this can be avoided ?

72. When is a functional dependency F said to be minimal?
73. What is Multivalued dependency?
74. What is Lossless join property?
75. What is Fully Functional dependency?
76. What is lossy decomposition?
77. What is transitive dependency?
78. What is 1NF, 2NF, 3NF and BCNF (Boyce-Codd Normal Form)?
79. Explain Closure of Set of Functional dependency and Closure of Attribute sets
80. Explain Canonical cover and Extraneous Attributes with examples.
81. What do you understand by dependency preservation?
82. What is the need of the normalization? Explain the first three steps involved in the normalization.
83. What are the different phases of transaction?
84. What are the ACID properties of a transaction?
  - a. What do you mean by isolation? Why is it important? Give an example.
  - b. What do you mean by consistency? Why is it important? Give an example.
  - c. What do you mean by atomicity? Why is it important? Give an example.
  - d. What do you mean by durability? Why is it important? Give an example.
85. List out the states of a transaction.
86. Discuss the immediate update recovery technique in both single and multiuser environment.
87. Explain the purpose of checkpoint mechanism. How often should checkpoints be performed
88. List and explain various types of specialized locking techniques used in DBMS
89. Why is concurrency control needed? Explain lost update, Inconsistent retrievals and Uncommitted dependency anomalies.
90. What is a deadlock ? How can a deadlock occur ? explain.
91. Briefly explain one deadlock prevention algorithm.
92. What if time stamping is used ? Explain briefly
93. What is two-phase locking and how does it guarantee serializability ?
94. Discuss the concurrency control mechanism in detail using suitable example.

95. Differentiate between Two phase locking and Rigorous two-phase locking.
96. How can deadlocks be avoided when using 2PL?
97. How Share and exclusive locks differ ?Explain.
98. How precedence graph can be used to detect deadlock ?
99. What is a system log ? What is the purpose of the system log in system recovery ?
- 100.What do you understand by distributed databases? Give the various advantages and disadvantages of distributed database management system.
- 101.What is database recovery? Why backups are important?
- 102.What are transaction logs?
- 103.What do you mean by rollback?
- 104.What is the difference between volatile and non volatile storage?
- 105.What are redo and undo logs?
- 106.What is a timestamp? State its advantages.
- 107.What is shadow paging? State its advantages.
- 108.What are the methods used to prevent the system from dead lock?
- 109.What is database recovery? Why backups are important?
- 110.Explain shadow paging recovery scheme in detail.
- 111.What is database? What is DBMS? Its functions and applications.
- 112.Disadvantage of File Processing System? Advantages of DBMS over File System?
- 113.Describe the three levels of data abstraction? Also explain the role of DBA?
- 114.What is Data Independence? What is a view? How it is related to data independence?
- 115.Explain SQL and all the Database Languages.
- 116.Describe Transaction Management with its state diagram and properties.
- 117.Classify database Management System with brief description about all.
- 118.Explain the three schemas Architecture with suitable diagram.
- 119.Discuss the overall Database structure with suitable diagram.
- 120.Define the terms:
  - a) Data redundancy
  - b) Data Consistency
  - c) Data Integrity
  - d) Data Isolation

# **Punyashlok Ahilyadevi Holkar Solapur University, Solapur.**

## **Question Bank**

**Subject : Core Java**

**Class : MCA I (SEM-II)**

### **A) Short notes on the following**

1. Java user packages.
2. Action Event class.
3. Character Stream
4. Explain execute() method.
5. Method Overriding
6. Thread Priority
7. State the purpose of the following JDBC classes and interfaces.
8. Driver manager
9. Connection
10. Statement
11. Result set
12. batchUpdate()
13. JVM Machine

### **B) Descriptive Questions**

1. Define the term Class and Objects. Discuss the concept of Constructor with suitable example.
2. Define a Stream? Differentiate between a byte oriented and a character oriented stream.
3. What is polymorphism? Explain run-time polymorphism with example.
4. Write a program to demonstrate any five string operations using string class.
5. What is multithreading? Explain the concept of thread priority.
6. Describe the methods used to establish used to establish inter-thread communication in Java.
7. State the difference between interface and abstract class with example.
8. List and explain interface that support for AWT event handling.
9. What is constructor? Explain constructor overloading with example.
10. Differentiate between the statement and PreparedStatement with suitable example.
11. Explain predefined exception with an example.
12. Write a program to implement Multithreading.
13. What is custom exception? Explain with example.

14. What is constructor overloading? Give one example.
15. Explain with suitable example, how to use a try- catch block, Explain with example.
16. Explain steps in creation and implementation of package with example.
17. WAP to read number from user and check it is Prime or not. If given number is negative or zero then throw exception and give message "Enter number greater than zero".
18. What is difference between String and String buffer and explain 3 methods of String and String buffer class with example.
19. Write the syntax and purpose of any five methods of String class.
20. Describe exception handling in Java.
21. State the purpose of the following JDBC classes and interfaces i) Driver manager ii) Connection iii) Statement
22. Explain how to create a new thread using the class Thread with suitable example.
23. Write a JDBC program to insert information of a student (rollno, name, marks, grade) and display the inserted information.
24. What is ResultSetMetaData? Explain with Example.
25. What is interface? What is use of interface?
26. Explain Abstract Classes with its advantages.
27. How to define a package? How to access, import a package? Explain with example.
28. Method overriding & Overriding
29. Arrays in Java write addition of two 2D array
30. Explain the different types of inheritance in java.
31. Explain Thread priority in java with suitable example.
32. Explain Architecture of JDBC.
33. Explain Thread life cycle in java.
34. What is the use of Layout Managers? Explain GridLayout with example.
35. Explain FileWriter and FileReader class with an example.
36. Define Constructor. Explain the types of constructor.
37. Describe string and StringBuffer classes.
38. What the use of this & super keyword?
39. How to create the user defined exception for calculating ROI for Bank?
40. What is static? How to create static method?
41. Differentiate while and do while loop.
42. Write a code to create the multiple inheritances.
43. Write a program to display two strings with two threads and use thread Priorities for second thread.
44. Write a program to take array data as input from console and sort it in descending order
45. Write a java program to read text from a file and display it on output device.
46. Write a program to copy one text file into another text file.
47. Write a program to demonstrate the implementation of PreparedStatement interface.
48. Differentiate between a constructor and a method
49. What is Thread? Explain different Thread methods.
50. What are the steps in the JDBC connection? Explain in detail.

**Punyashlok Ahilyadevi Holkar,  
Solapur University, Solapur.**

**Question Bank :-**

**Class :- MCA I Sem. II**

**Subject :- Computer Communication Network**

**Q.) Answer the following**

- 1) What is computer network? Explain different uses of computer network?
- 2) Explain client-server communication in detail?
- 3) What is internetworks?
- 4) Distinguish between connection oriented and connectionless service?
- 5) Explain OSI Reference Model in detail?
- 6) Explain TCP/IP Reference Model in detail?
- 7) Explain architecture of Internet?
- 8) Explain Cyclic Redundancy Check in detail?
- 9) Explain Simplex Stop-and-Wait Protocol?
- 10) What is Sliding Window protocol? Explain?
- 11) Explain different service primitives?
- 12) Explain Stop and Wait ARQ Protocol?
- 13) Which are the various design issues for layers?
- 14) Compare Virtual Circuit and Datagram Subnet?
- 15) What is Wireless Network? Explain?
- 16) Explain store-and-forward packet switching techniques?
- 17) What are the different services provided to the Transport Layer?
- 18) What is Routing? Explain shortest path routing algorithm?
- 19) Explain Link State Routing Algorithm?
- 20) Explain hierarchical Routing Algorithm?
- 21) Explain Routing for Mobile Host in details?

- 22) What is Congestion? Explain congestion control algorithm?
- 23) Explain Leaky Bucket Algorithm?
- 24) Explain Token Bucket Algorithm?
- 25) What is internetworking? Explain in detail?
- 26) How Networks can be connected?
- 27) Explain concatenated virtual circuit?
- 28) What is connectionless internetworking? Explain?
- 29) What is Tunneling?
- 30) Explain internetwork routing?
- 31) Explain IP Protocol in detail?
- 32) What is NAT? Explain?
- 33) Explain ICMP in detail?
- 34) Explain ARP in detail?
- 35) Explain Transport Service Primitives?
- 36) What is Berkeley Sockets? Explain?
- 37) Explain Addressing mechanism in Transport Layer?
- 38) Explain Flow Control and Buffering mechanism in Transport layer?
- 39) What is RPC? Explain RPC mechanism in detail?
- 40) What is TCP? Explain TCP Segment Header format?
- 41) What are the Elements of Transport Layers in computer network? Explain any one detail?
- 42) What is DNS (Domain name System) in detail?
- 43) What is SMTP (Simple Mail Transfer Protocol)? Explain in detail?
- 44) What is HTTP (Hyper Text Transfer Protocol)? Explain in detail?
- 45) Explain WAP (Wireless Application Protocol) in detail?

**Q) Write short note on :-**

- 1) LAN
- 2) MAN
- 3) WAN
- 4) Flow control



- 5) Error Control
- 6) TCP
- 7) IP
- 8) ARPANET
- 9) Framing Hamming Code
- 10) Parity
- 11) Flooding
- 12) Broadcast Routing
- 13) AdHoc Network
- 14) Load Shedding
- 15) Jitter
- 16) Fragmentation
- 17) IP Address
- 18) Subnet
- 19) RARP
- 20) UDP
- 21) TCP
- 22) Resource Records
- 23) HTML
- 24) Electronic Mail
- 25) WWW
- 26) WAP
- 27) HTTP

**Punyashlok Ahilyadevi Holkar Solapur University, Solapur**

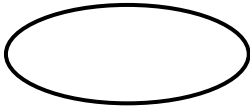
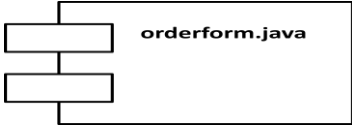
MCA- I Sem.- II (Computer Science)

Question Bank

Paper Name : UML

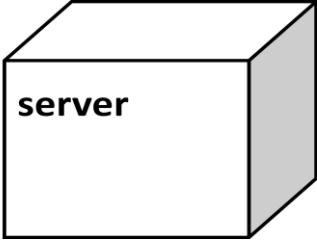

**Question - Answer the following**

1. Distinguish between process and threads.
2. Describe importing and exporting of packages.
3. Explain the concept of joining and forking in activity diagram.
4. Explain the terms and concepts used in Use Case Diagram.
5. Explain generalization among packages.
6. Write the use of following notations in UML.

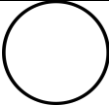

No.	Nootation
I	
II	

7. What do you meant by public, private and protected elements in class and does show these in a class diagram.
8. What is an event? What are the four kinds of events you can model in UML?
9. Describe the architecture of software intensive system.
10. Describe common mechanism used in structural modeling.

11. What is a component? How it is represented in UML? What are different kinds of components?
12. Explain structural part and behavioral part of collaboration diagram.
13. Explain the concept of swimlanes in activity diagram.
14. What is an interaction diagram? What is the difference between sequence diagram and collaboration diagram?
15. Draw the use case diagram for online digital library system.
16. Explain UML software development life cycle.
17. What is a package? How it is represented in UML?
18. Explain the importance of object oriented modeling.
19. Explain common mechanisms used in structure modeling.
20. Explain the terms and concepts used in Activity Diagram.
21. Explain the principles of modeling.
22. Explain the term aggregation with suitable example.
23. Write the use of following notations in UML.

No.	Noatation
I	
II	

24. What is adornment in UML? What are the four adornments that can be applied to association?
25. What is a component? How it is represented in UML? What are different kinds of components?
26. What is state of an object? Describe state machine.
27. Explain group things and annotational things in UML.
28. Write and explain the syntax of an attribute in UML.
29. What is action states and activity states?
30. What is a diagram in UML? What are the different kinds of diagram in UML?
31. Explain the various terms and concepts used in sequence diagrams.
32. Explain common mechanisms used in structure modeling.
33. What are advantages of UML?
34. Distinguish between process and thread.
35. UML is made simpler by the presence of four common mechanisms. What are these common mechanisms.
36. What is dependency relationship? Give suitable example.
37. What are a node and a component? What is significant difference between a node and a component?
38. Draw the class diagram for online digital library system.
39. Write the use of following notations in UML.

No.	Noatation
I	
II	

40. What is reverse engineering? Explain with example.
41. What is an event? Describe Time and Change events.
42. What is an instance and orphan instance? How an instance, anonymous instance, orphan instance and multiobject are graphically rendered in UML?
43. Explain group things and annotational things in UML.
44. Describe statechart diagram.
45. Explain aggregation and composition with help of suitable example.
46. Explain the terms and concepts used in deployment diagram.
47. What are the features of Object Oriented Programming?

**Question - Write short notes on**

1. Behavioral things
2. Interface
3. State machines
4. Structural Modeling
5. Join and fork
6. Events and signals
7. Polymorphism
8. Dependency relationship
9. Association
10. Generalization
11. Swimlanes
12. Visibility and scope
13. Action state and Activity state
14. Time and change events
15. Processes and threads
16. Class and Object