V.S.B. ENGINEERING COLLEGE, KARUR
Academic Year: 2017-2018 (Even Semester)
Department of Computer Science and Engineering
Question Bank (2013 Regulations)

S.No.	Name of the Subject / Lab	Semester	Page No.
1	Distributed systems	VI	2
2	Mobile computing	VI	7
3	Compiler Design	VI	12
4	Artificial Intelligence	VI	17
5	Software testing	VI	22

DISTRIBUTED SYSTEMS QUESTION BANK

UNIT I

PART A

1. Define distributed systems?
2. Give examples of distributed systems .
3. Write the following

(i) HTTP (ii) HTML (iii) URL

4. What are the uses of web services?
5. Define heterogeneity.
6. What are the characteristics of heterogeneity?
7. What is the purpose of heterogeneity mobile code?
8. Why we need openness?
9. How we provide security?
10. Define scalability.
11. What are the types of transparencies?
12. Define transparencies.
13. Define System model.
14. What is the architectural model?
15. What is the fundamental model?
16. What are the difficult for treat and distributed system?
17. Define Middleware.
18. What are the different types of model?
19. Which type of network can be used by distributed system?
20. What are the different types of network?
21. Define latency.
22. What is the difference between networking and internetworking?
23. What is meant by networking?
24. What is meant by internetworking?
25. What are the different types of switching are used in computer networking?
26. Define protocol.
27. What is the function of router?
28. What is meant by internet protocol?
29. Define domain name.
30. Define mobile IP.

PART B

1. Explain the Differences between intranet and internet.
2. Write in detail about www.
3. Explain the various challenges of distributed systems.
4. Write in detail about the characteristics of inter process communication.
5. Explain in detail about marshalling.
6. Explain about the networking principles.
7. Describe in detail about client - server communication.
8. Write in detail about group communication.
9. Explain in detail about the various system models.
10. Describe details about architectural model.
11. Describe details about functional model.
12. Explain the various types of networks.
13. What are the networking issues for distributed System?
14. Explain about the internet protocols.

UNIT II
PART A

1. What is meant by interprocess Communication?
2. What is the difference between RMI and RPC?
3. Define Datagram.
4. What is the use of UDP?
5. What are the methods provides by datagram socket?
6. What are the characteristic of network hidden by stream abstraction?
7. What is the use of remote object references?
8. What is meant by client server communication?
9. What is meant by group communication?
10. What is the use of RMI registry?
11. What is meant by distributed garbage collection?
12. Explain the use of Reflection in RMI?
13. Define Name spaces.

PART B

1. Explain the Communication between distributed objects.
2. Explain in detail about Events and Notifications.
3. Explain in detail about Remote Procedure call with a case study.
4. Describe java RMI.

5. Explain about the group communication.
6. Describe about the client server communication.
7. Explain characteristics of inter process communication.
8. Explain UDP datagram communication.
9. Explain the various type communications.

UNIT III

PART A

1. What are core OS Components?
2. What is meant by cluster?
3. Define Thread.
4. What is meant by address space?
5. What is meant by invocation performance?
6. Difference between monolithic and micro kernels.
7. What is meant by cryptography?
8. What is the use of cryptography?
9. What is meant by distributed file system?
10. What are the different types of distributed file system available?
11. Define metadata.

PART B

1. Explain Processes and threads.
2. Explain Communication and invocation.
3. Describe Operating system architecture.
4. Explain the different types of cryptographic algorithm.
5. Explain Global States and distributed debugging.
6. Explain the algorithms for mutual exclusion.
7. Discuss about threads in distributed systems.
8. Discuss about the distributed file system.
9. Explain about the file server architecture.
10. Explain about the Andrew file system.

UNIT IV

PART A

1. What is the Name Spaces?
2. What is the domain name system?
3. Define directory services.

4. What is the Berkeley algorithm?
5. Define global State.
6. What is the election algorithm?
7. Define clock skew, clock drift and clock drift rate.
8. Define causal ordering.
9. What is global state?
10. Define distributed deadlock.
11. List the methods to ensure serializabilty.
12. What is logical clock?
13. What is vector clock?
14. What are the requirements of mutual exclusion algorithms?
15. What is network partition?
16. What is nested transaction? Give an example.

PART B

1. Explain in detail about Name services.
2. Discuss in detail about domain name services.
3. Explain the case study of Global name services.
4. Explain the case study of X.500 directory services.
5. Explain about the Events and process state.
6. Explain about the Logical time and logical clocks.
7. Write the short notes Distributed mutual exclusion and elections.

UNIT V

PART A

1. Define transaction.
2. Define ACID properties.
3. Define Concurrency control.
4. What is meant by nested transactions?
5. Define strict two phase locking.
6. Define deadlock.
7. Difference between validation phase and update phase
8. Define time stamp ordering.
9. Define two-phase commit protocol.
10. Define Edge chasing.

PART B

1. Explain in detail about concurrency control in transaction.
2. Discuss in detail about deadlock and locking schemes in concurrency control.
3. Explain optimistic concurrency control.
4. Explain in detail about comparison of methods of concurrency control.
5. Explain Time stamp ordering in detail.
6. Explain the concurrency control in distributed transactions.
7. Explain about distributed deadlocks.
8. Describe in detail about distributed deadlocks.

NAME OF THE CODE / SUBJECT : IT 6601 MOBILE COMPUTING
YEAR / SEMESTER : III/VI

UNIT – I
PART - A

1. Define Mobile computing?
2. List the wireless networking standards used in Mobile computing?
3. Differentiate between Mobile Computing and Wireless Networking.
4. List the applications of Mobile Computing
5. Point out in what way mobile computing is useful to our society?
6. Give the challenges in Wireless Communication.
7. Define MAC Protocol.
8. List the issues of Wireless MAC Protocol
9. Point out the problems faced by devices in Wireless Transmission?
10. What is the use of Ad-Hoc networks?
11. Classify the MAC Protocol.
12. Classify the different types of wireless networks?
13. Distinguish between infrastructure-based network and infrastructure less network.
14. Describe the function of presentation, application and data tier of mobile Environment.
15. Show the role of a MAC protocol.
16. Classify Hidden Terminal and Exposed Terminal Problem with the help of a diagram.
17. Compose a role which is played by Radio/Infrared signals play in Mobile Computing?
18. What are all the three layers of mobile computing architecture?
19. Tell about ubiquitous computing.
20. List out two types of Carrier Sense Multiple Access.

UNIT – II
PART – A

1. Define Mobile IP.
2. What do you mean by agent solicitation?
3. Express about encapsulation?
4. What do you mean by the term binding of mobile node?
5. Predict the functions of DHCP?
6. Differentiate between Traditional IP and Mobile IP?
7. Formulate a plan to create mobile IP along with basic requirements?
8. What do you know about ‘agent discovery’?
9. Define Tunneling.
10. Differentiate between Tunneling and reverse Tunneling
11. Point out the need for mobile IP? Justify your statement.
12. Define COA?
13. Explain indirect TCP model with a neat diagram
14. Illustrate about congestion control?
15. Illustrate about mobile TCP?
16. Develop a solution to reduce the congestion in a mobile network.
17. Assess why does Congestion occur in a network?
18. Point out the meaning of ‘Slow Start’ in Mobile Computing?
19. Assess the term ‘Mobile Node’.
20. Demonstrate the advantage and disadvantages of Mobile TCP.

UNIT – III
PART – A

1. Define GSM.
2. Tabulate the services of GSM?
3. Show the importance of GPRS
4. Explain in what ways is GPRS better than GSM?
5. Define UMTS.
6. Classify the functions of HLR and VLR?
7. Differentiate between a GMS network and UMTS network.
8. Give the Functions of GGSN?
9. Quote BSS.
10. Discuss about BTS.
11. Express about BSC.
12. Point out the purpose of EIR in Mobile Computing?
13. Define OMC.
14. Classify the major functions in RSS?
15. Create different ways to develop anonymity?
16. Discriminate between UMTS networks and 2G networks.
17. Show the differences between 1G, 2G,3G Cellular Networks?
18. Explain the importance of VHE.
19. Formulate the various services of GSM
20. Define Call Routing.

UNIT – IV
PART – A

1. Define an ad hoc network?
2. Show the applications of MANETs.
3. Summarize the characteristics of MANETs.
4. Examine the requirement for Ad-Hoc
5. Networks for its working?
6. Explain the MANET routing algorithms?
7. Prepare the differences between VANET and traditional MANET?
8. Give a comparison between DSDV and DSR.
9. Analyze about the term 'CGSR'.
10. Express dynamic source routing (DSR).
11. Summarize about MANETs. Security.
12. What are the advantages in DSR?
13. Differentiate between MANET routing strategies with routing strategies of traditional networks.
14. Quote dynamic topology of MANET?
15. Compose cellular network and wireless LAN to be considered as ad-hoc networks? Justify your answer.
16. Interpret the count to infinity problem.
17. List the two types of communication in a MANET?
18. What is hybrid routing protocol?
19. Identify the issues that are addressed by routing protocol in MANET?
20. Give some popular Routing Protocols.
21. Discuss why traditional routing strategies cannot be deployed in a MANET?

UNIT – 5
PART – A

1. What is microkernel operating system?
2. Express three commercial operating system for mobile phones.

3. Differentiate the operating system for mobile phone different from the operating system for desktop?
4. Show the advantages of mobile operating system?
5. What are the disadvantages in the context of the design of mobile operating system?.
6. Rank the uses of mobile payment system
7. List applications of M-commerce.
8. Summarize in a short way about BTL2B and BTL2C commerce.
9. Express micropayment in M-Commerce.
10. Define one different payment system are available in M-Commerce.
11. Show why microkernel preferred for developing a mobile OS?
12. List the different versions of Android.
13. Give the drawbacks of Symbian OS.
14. Give any two features of window Phone.
15. Describe UIQ interface.
16. Develop android software stack with neat diagram.
17. Describe the features of Blackberry operating system.
18. Differentiate between Android, Symbian OS, Windows phone 7.
19. Locate a structure of sensor operating system.
20. Differentiate between OS for sensor Network with Traditional OS.

UNIT – I

PART – B

1. Explain in detail about Mobile Computing Classify its various applications in the real world scenario.
    (i) Describe the various random assignment schemes that are used in MAC protocol.

    (ii) Predict the various Fixed assignment schemes.
    (iii) Discuss the various Reservation Based schemes.
2. Summarize the issues of Wireless MAC Protocols.
3. Demonstrate the working of contention based MAC Protocols.
4. Identify the use of MAC Protocols. How do MAC protocol for Wireless networks differ from wired network? Justify your Statement.
5. Prepare a brief account of scheduled based MAC protocol. Name any one scheduled based MAC protocol.
6. Describe in detail about TDMA,FDMA,CDMA and tabulate the difference among them.
7. Classify the MAC protocols. Specify any one category of your choice and give an example.
8. Describe the role of pseudo random generator in the working of CDMA Protocol.
9. Define the following terms:-
    (i) Presentation Tier
    (ii) Application tier
    (iii) Data Tier in a Mobile Computing Environment.

UNIT – II

PART – B

1. Define Short Notes on :-
    a. a)Home Address
    b. b)Mobile Node
    c. c)Foreign Agent
    d. d)Foreign Network
    e. e) Home Network

2. Discriminate in detail about traditional IP. How does it differs from Mobile IP? Why cannot the traditional IP be used in the mobile network.In what way does mobile IP support mobile Hubs?
3. Describe the following terms in detail:
    a)Corresponding Node
    b)Care of Address
    c)Agent Discovery
    d)Tunneling and Encapsulation
4. Demonstrate the working of mobile IP with the help of a diagram.
5. Express brief account of route optimization in Mobile IP
6. Examine the reason why congestion occurs in a network? Explain how does TCP detect and handle congestion.
7. Classify the working of freeze-TCP.
8. Explain the layered architecture of the TCP/IP protocol suite and compare it with the ISO/OSI architecture.
9. Summarize slow start in TCP operation? Explain its working. How does slow start help improve the performance of TCP?
10. Quote I-TCP and Explain Indirect TCP(I-TCP) with the help of a suitable schematic diagram.
11. Modify the normal TCP to M-TCP for working efficiently in wireless Mobile Network.

UNIT – III

PART – B

1. Explain in detail about GPRS architecture.
2. Describe about the system architecture of Global System for Mobile Communication.
3. Show how a GSM network Provides security to the customers.
4. Demonstrate briefly about VHE. In what way is VHE is applied in 3G networks?
5. What if Mobile phones have an effect on the human body? Justify Your statement.
6. Describe in detail about GPRS procedures in detail.
7. Classify briefly about the various categories of GSM services.
8. Summarize UMTS. Describe the functions of HLR and VLR in call routing and roaming?
9. Describe how the mobile cellular communication has evolved over the generation of technology.
10. Summarize 1G,2G,3G cellular networks in detail.

UNIT – IV

PART – B

1. Discuss DSDV routing in detail with a neat diagram.
2. Illustrate DSR routing in detail and compare with DSDV.
3. Demonstrate how multicast routing is carried out in ad-hoc networks.
4. Formulate, What are problem does dynamic topology cause in the design of routing protocol?
5. How are these problem addressed in a popular MANET routing protocol?
6. Evaluate why traditional packet routing protocol for wired network cannot be used straightaway in a MANET. Discuss how the routing protocols.
7. Describe at least three applications of Mobile Ad-Hoc Networks.
8. Define VANET? Explain how does it differ from MANET? Explain any one application of VANET.
9. Describe about size and node density of MANET? Explain any two terms and conclude how these two parameters impact the design of MANET.
10. Point out any one routing techniques that can be used in mobile ad-hoc networks.
11. Define short notes on:
    a) Characteristics of a secure ad hoc network.
    b) Security attacks in ad hoc networks.

UNIT – V

PART – B

1. Assess the special features that an operating system for mobile device needs to support compared to the features provided by a traditional operating system
2. Describe microkernel operating system. Why microkernel is based design being preferred for developing a mobile OS?
3. Explain the principle functions of the operating system of a mobile device. Discuss how an example application can be implemented on a mobile device and the specific operating system service that it make use of.
4. Illustrate about Ad-Hoc basic concepts.
5. Describe briefly the architecture of the Andriod operating system. Briefly identify the possible reasons as to why it has been able to rapidly improve its market share compared to its peers since its introduction few years ago.
6. Illustrate with at least one suitable example, explain the flexibilities that a user would be required to sacrifice when a single tasking operating system is used in the mobile device.
7. Illustrate some of the security issues in Mobile Payment Systems.
8. Describe mobile payment system? Examine an application where mobile payment may be useful. Explain the different payment systems that are available.
9. What do you understand by M-commerce? Explain the advantages and disadvantages of M-commerce? Identify the situation where micropayments are essential and how it can be achieved?
10. Compose a definition for BTL2B and BTL2C commerce? When are these techniques used and where it is used? Describe with an example.

COMPILER DESIGN

UNIT-I

INTRODUCTION TO COMPILERS

PART A

1. What is a compiler? [AUT Nov. / Dec. 2011] [AU Nov. / Dec. 2009]
2. What is symbol table? [NOV/DEC 2016]
3. What is a hybrid compiler? Give an example.
4. What are the two parts of a compilation? [MAY/JUNE 2016].
5. List the phases of the compiler.
6. Mention some of the cousins of a compiler. [AU Apr/May 2004, 2005][AU Nov/Dec 2013]
7. Mention the back-end phases of a compiler.
8. List the subparts or phases of analysis part.
9. What are the classifications of a compiler?
10. What is a symbol table? [AU Nov/Dec 2007]
11. List the compile construction tools. [NOV/DEC 2016]
12. What is syntax analysis?
13. What is the use of Syntax directed translation engines?
14. What is the function of the semantic analyzer? [AU Nov / Dec 2011]
15. What are the functions of Intermediate code generator?
16. What is the function of the code generator?
17. What is the function of the code optimizer?
18. State some software tools that manipulate source program.
19. What is the function of pretty printers and static checkers?
20. How the Grouping of phases into passes is organized?
21. What are the various compiler construction tools available? [AU Apr/May 2008]
22. Define compiler-compiler. [AUT Nov/Dec 2010]
23. What are the functions of preprocessor? [AU Nov/Dec 2007] [AUT Nov / Dec 2011]
24. Define preprocessor. [AU May/Jun 2007]
25. Differentiate analysis and synthesis. [AUT Nov/Dec 2010]
26. Represent the following expression into lexical analysis phase and semantic analysis phase:
    Average = (mark1 + mark2) * 1.5 / 2. [AUT Nov/Dec 2010]
27. Compare compiler and interpreter. [AU Nov. / Dec. 2012] [AU May / June 2013]
28. What is meant by a cross – compiler? [AU Nov. / Dec. 2012] [AU May / June 2013]
29. What is a loader?

PART B

1. Explain the Phases of Compiler with a neat diagram. NOV/DEC 2016
2. Explain the need of grouping of phases. MAY/JUNE 2016
3. What are the cousins of a Compiler? Explain them in detail. NOV/DEC 2013
4. List and explain the various Compiler construction tools. NOV/DEC 2016
5. Explain the various types of errors encountered in different phases of compiler. NOV/DEC 2016
6. Explain the types of translator. MAY/JUNE 2014

UNIT-II

LEXICAL ANALYSIS

PART A

1. What is the role of lexical analyzer?[AU Nov/Dec 2013]
2. Differentiate tokens, patterns, lexeme. [May / June 2013] [NOV/DEC 2016]
3. List the operations on languages. [MAY/JUNE 2016[.
4. Write a regular expression for an identifier.

5. Mention the various notational short hands for representing regular expressions.
6. What is the function of a hierarchical analysis?
7. What does a semantic analysis do? [AU Nov / Dec 2011]
8. List the various error recovery strategies for a lexical analysis. [AU Apr/May 2005]
9. What are the components of Context Free Grammar?
10. What is the function of the syntactic analyzer?
11. Define input buffering. [AUT Nov/Dec 2010]
12. What is a Sentinel? [AU Nov / Dec 2010]
13. What is a Sentence?
14. How will you specify the patterns?
15. What is a Language? What are the operations that cane be applied on it?
16. What is a regular definition?
17. Which constructs of a program should be recognized by the lexical analyzer, and which ones by the syntax analyzer?
18. What are the issues in Lexical Analysis? [AU May/Jun 2007, 2009, 2013]
19. What is a DFA?
20. Differentiate between NFA and DFA. [AU Nov / Dec 2012]
21. Write a regular expression for the set of all strings of 0's and 1's with an even number of 0's and an odd number of 1's. [AU Nov / Dec 2012]

22. What is LEX? [AU May / June 2013]
23. Write the difference between regular grammar and context free grammar. [AU May / June 2013]
24. Differentiate Tokens, patterns and lexeme. [NOV/DEC 2016].
25. What are the components of Lex? [NOV/DEC 2015].

PART B

1. Explain the role of Lexical Analyzer and issues of Lexical Analyzer. MAY/JUNE 2016
2. Differentiate between lexeme, token and pattern. MAY/JUNE 2016
3. Explain the various error recovery strategies in lexical analysis. APR/MAY 2015
4. Conversion of regular expression (a/b)*abb to NFA. NOV/DEC 2016
5. What is the purpose of input buffering? Explain the process in detail.
6. How the DFA is constructed from regular expression?
7. Draw NFA for the regular expression ab*/ab. MAY/JUNE 2014

UNIT III
SYNTAX ANALYSIS

PART A

1. Define parser or State the role of parser. [AUT Nov/Dec 2010, Nov/Dec 2013]
2. Mention the basic issues in parsing.
3. Why lexical and syntax analyzers are separated out?
4. Define a context free grammar. [AU Nov / Dec 2009, Nov/Dec 2013]
5. What is meant by of derivation?
6. Define ambiguous grammar. [AU Nov/Dec 2007]
7. What is an operator precedence parser?
8. List the properties of LR parser.
9. Mention the types of LR parser.
10. What are the problems with top down parsing? [AU May/Jun 2009]
11. Write the algorithm for FIRST and FOLLOW.
12. List the advantages and disadvantages of operator precedence parsing.[AU May/Jun 2007]
13. What is dangling else problem?

    Ambiguity can be eliminated by means of dangling-else grammar which is shown below:

    Stmt | if expr then stmt
    | if expr then stmt else stmt

| other

14. Define YACC.
15. What is meant by handle pruning?
16. What is meant by viable prefixes?
17. Define handle. [AU Nov /Dec 2012]
18. What are kernel & non-kernel items?
19. What is phrase level error recovery?
20. State the difference between sentential and sentence of a context free grammar G.
21. What is L(G)?
22. What is the difference between left most and right most derivation?
23. What is a Left recursive grammar?
24. Why we need Left Factoring? [AU Nov / Dec 2011]
25. How will you eliminate the Left Recursion in Grammars?
26. List out the important features of Predictive Parsing. [AU Nov/Dec 2007]
27. What is a Non-Recursive Predictive Parsing -- LL(1) Parser?
28. What are the components of the Parsing Table?
29. What are the properties of LL(1) grammar?
30. List out the possible error may occur in the predictive parsing (LL(1) parsing).
31. List the various error recovery techniques?
32. What will be performed in Panic-Mode and Phrase-Level Error Recovery?
33. What is an Error Production?
34. How panic-mode error recovery is performed in LL(1) parsing?
35. What is a Shift Reduce parsing?
36. What are the Conflicts encountered During Shift-Reduce Parsing?
37. What is an annotated parse tree? [AU May / June 2013]
38. Write the difference between Top down parsing and Bottom up parsing. [AU May / June 2013]

PART B

1. Write an algorithm for Non recursive predictive parsing. MAY/JUNE 2015.
2. Explain the error recovery in predictive parsing.
3. Find the SLR parsing table for the given grammar and parse the sentence.

4. Construct parse tree for the input string w=cad using top-down parser. NOV/DEC 2016
5. Construct parsing table for the grammar and find moves made by predictive parser on input id+id*id and find FIRST and FOLLOW. NOV/DEC 2016
6. Explain Context free grammar with examples. MAY/JUNE 2016.
7. Distinguish between context free grammar and regular grammar. NOV/DEC 2015.
8. What is a shift-reduce parser? Explain in detail the conflicts that may occur during shift-reduce parsing. MAY/JUNE 2012
9. For the operators given below, calculate the operator-precedence relations and operator precedence function id, +, *, $
10. What are the conflicts during shift-reduce parsing? Explain it with example. NOV/DEC 2015.

UNIT IV
SYNTAX DIRECTED TRANSLATION & RUN TIME ENIVRONMENT

PART A

1. What are the different intermediate languages available? [AU Nov/Dec 2007][AU May / June 2013, Nov/Dec 2013]
2. What are various representation of Three address statement? [AU Nov/Dec 2007]
3. What are the properties of three address code?
4. What is a translation scheme?
5. What is the need for type checking and type analysis?
6. Mention the rules for type checking.

7. Mention the rule of semantic analysis.
8. What do you mean by type expression?
9. Define type system.
10. Give examples for static check.
11. Define Coercion.
12. What is record in type expression?
13. How to use a name of X for the field within a record does not conflict with the other uses of name outside the record?
14. How the Elements of arrays can be accessed in two Dimensional array?
15. How to implement statements using control flow?
16. What is meant by back patching? [AU Nov /Dec 2012] [AU May / June 2013]
17. Write the syntax directed translation for procedure call.
18. What are the two representations to express intermediate languages?
19. Define triple and give one example. [AU Nov/Dec 2007]
20. Define quadruple and give one example. [AU Nov/Dec 2007]
21. List the types of type conversions.
22. What is the merit of quadruples?
23. What are the benefits of intermediate code generation? [AU May/Jun 2009]
24. Write the difference between Syntax Tree and DAG. [AU May / June 2013]
25. Why is SDT needed? AU May / June 2013]
26. What is an activation tree? [AU Nov/Dec 2007] [AU Nov / Dec 2011]
27. What do you meant by scope of the variable?
28. What is an activation record?
29. Who allocates an activation record of a procedure?

PART B

1. What are the rules of type checking. NOV/DEC 2015
2. Explain the sequence of stack allocation processes for a function call. NOV/DEC 2013..
3. Explain in detail about the specification of a simple type checker. MAY/JUNE 2012
4. Mention in detail the issues in storage organization. MAY/JUNE 2015
5. Discuss the specification of storage allocation strategies. MAY/JUNE 2015
6. Discuss in detail about storage allocation strategies. NOV/DEC 2013
7. Write about implementation of three addressing statements. MAY/JUNE 2012
8. Write short notes on parameter passing methods in procedure calls. NOV/DEC 2013

UNIT V
CODE OPTIMIZATION AND CODE GENERATION

PART A

1. What is meant by code optimization? [AU Nov/Dec 2013]
2. What is an optimizing compiler?
3. What are the properties of optimizing compiler? [AU May / June 2013]
4. What is copy propagation?
5. What is a Function – Preserving Transformation?
6. Which type of expression is called as common sub expression?
7. What is meant by constant folding? [AU May June 2013]
8. What is happening at code motion?
9. What is induction variable?
10. What is strength reduction?
11. What is Dominators?
12. What are the classifications of Edges?
13. What is meant by Back Edges?
14. What is reducible flow graph?
15. What is natural loop? How can be it constructed? What are its properties?

16. What is Data-flow analysis?
17. What does the data-flow analysis framework contains?
18. Give any four applications of DAG. [AU May / June 2013]
19. What is meant by Live Variables?
20. What do you by instruction cost? [AU Nov / Dec 2011]
21. Define Peephole optimization. [AU Nov / Dec 2012]
22. Give an example to represent code motion and reduction in strength. [AUT Nov/Dec 2010]
23. What are the characteristic of a peephole optimization?
24. Identify the induction variables in the following segment of basic block and eliminate to optimize the
25. What is Code generation?
26. What are the issues in the design of a code generator? [AU May/Jun 2009] [AUT Nov/Dec 2010]
27. What are the problems identified while using registers?
28. What is the flow of control in a program? [AU Nov/Dec 2007] [AU May / June 2013]
29. What is a basic block?[AU Nov/Dec 2007] [AU May / June 2013]
30. How do we allocate the space for the generated target code and the data object of our source programs?
31. What do you meant by dangling reference problem? Give an example.
32. What are the two types of transformation that can be applied to basic blocks?[AU May/Jun 2007] [AU Nov / Dec 2011]
33. What is a DAG? State its uses? [AU May/Jun 2007] [AUT Nov/Dec 2010][AU Nov/Dec 2013]
34. What is the use of Next – use information? [May / June 2012]
35. What is code motion? [AU May/Jun 2007] [AUT Nov/Dec 2010] [AU May / June 2012]

PART B

1. Explain global data flow analysis with necessary equations. NOV/DEC 2016.
2. Describe how global data flow analysis can be used for optimization with an example. MAY/JUNE 2013
3. Explain the principal sources of optimization in detail. MAY/JUNE 2016
4. Consider the following code:

```
for(j=0;j<=30;j++)
{ f for(k=0;j<=30;k++)
{
x[j][k]=y[j][k]+z[j][k]
}
```

}. Perform the loop optimizations. MAY/JUNE 2013

5. Discuss in detail the process of optimization of basic blocks. Give an example. MAY/JUNE 2014
6. Write an algorithm for constructing natural loop of a back edge. NOV/DEC 2016.
7. Explain the various issues in the design of code generation. MAY/JUNE 2016.
8. What is data flow analysis? Explain data flow abstraction with examples. MAY/JUNE 2014
9. Write Short note on simple code generator. MAY/JUNE 2016.

CS6699- Artificial Intelligence
Question Bank
UNIT – I

Part- A:

1. What is Intelligence?
2. Describe the four categories under which AI is classified with?
3. Define Artificial Intelligence.
4. List the fields that form the basis for AI.
5. What is a Knowledge Based System?
6. List few of the task domains of AI.
7. Give the components of a KBS
8. Describe meta-knowledge?
9. Give the expansion of LISP and PROLOG
10. Interpret the meaning of a Production System.
11. Illustrate the definition of state-space search technique.
12. Show the steps involved in performing a state-space search.
13. Demonstrate the meaning of heuristic search
14. Compare Informed & Uninformed search with examples
15. Analyse the logic behind– Hill climbing, Best-First Search, BFS and DFS.
16. Analyse the meaning of means-end analysis.
17. Deduce the various problem characteristics.
18. Assess when hill climbing fails to find a solution?
19. Formulate the ways to overcome hill climbing problems.
20. Prepare the requirements of a good control strategy.

Part- B:

1. Describe briefly the various problem characteristics?
2. Identify the problems encountered during hill climbing and list the ways available to deal …..with these problems?
3. Describe the process of simulated annealing with example?
4. Discuss A* algorithm and the various observations about Understanding BTL2 …….algorithm briefly?
5. Discuss AO* algorithm in detail?
6. Illustrate in detail about the constraint satisfaction procedure with example?
7. Show how the steepest accent hill climbing works?
8. Explain in detail about the mean end analysis procedure with example?
9. Evaluate a problem as a state space search with an example?
10. Prepare the merits and demerits of depth-first and breadth-first search with the …...algorithm?

UNIT – II

Part- A:

1. How predicate logic is helpful in knowledge representation.
2. Define semantic networks
3. Identify the need of facts and its representation?
4. Describe property inheritance?
5. Tell briefly about ISA and Instance classes
6. Identify some use of conceptual dependency
7. Discuss FOL with an example
8. Give the definition of Horn clause.
9. Discuss uniqueness quantifier

10. Give the definition of Canonical horn clause
11. Show the difference between propositional and FOL logic
12. Illustrate the meaning of Game Playing
13. Analyse the definition of logic
14. Infer the definition of unification
15. Analyse clausal form and its usefulness
16. Deduce alpha & beta values in a game tree
17. Explain some of the knowledge representation techniques
18. Compose a well-formed formula (wff).
19. Compose the meaning of resolution/refutation?
20. Show the components of Game software

1. a. Describe the Issues in knowledge representation
   b. Describe alpha beta pruning procedure
2. How would the minimax procedure have to be modified to be used by a program playing a three or four-person game rather than two –person one?
3. Describe how will you represent facts in propositional and predicate logic with an example
4. Discuss Resolution in brief with an example
5. Give algorithm for propositional resolution and Unification algorithm
6. Illustrate in detail about forward and backward chaining with suitable example.
7. Discover the operation of the unification algorithm on each of the following pairs of literals:
   A. f(Marcus)and f(Caesar)
   B. f(x) and f(g(y))
   C. f(Marcus,g(x,y))and f(x,g(Caesar,Marcus))
8. Explain in detail about structured representation of knowledge
9. Explain about conversion to clause form algorithm in detail
10. Invent what is wrong with the following arguments a. Men are widely distributed over the earth
    b. Socrates is a man
    c. Therefore, Socrates is widely distributed over the earth Design.

UNIT – III

Part- A:

1. Define Bayes theorem
2. What do you mean by Rule based system?
3. What is inference?
4. List some of the rules of inference
5. What are knowledge based agents
6. What is credit assignment problem?
7. Give the definition of Frame problems
8. Express the meaning of fuzzy logic and its usage
9. Interpret plausible-move generator and give its role
10. Express Certainty factor in your words
11. Illustrate frames? How do they differ from semantic nets.
12. Demonstrate the frame manipulation primitives
13. Illustrate MYCIN style rule
14. Analyse scripts and its use.
15. Differentiate the forward and backward chaining.
16. Infer the CF, MB, and MD of h1 given three observations where CF(h1,O1) = 0.5 ,

CF(h1,O2) = 0.3, CF(h1,O3) = -0.2 Using MYCIN rules for inexact reasoning.

17. Deduce Bayesian networks with an example
18. Assess entailment?
19. Design goal directed model.
20. Formulate dumpster Shafer theory.

Part- B:

1. How does an inference engine work in frame based system?
2. What is certainty factor? How will you find it in various
3. Distinguish between production based system and frame based system.
4. Discuss Bayesian Network in detail
5. Dempster-Shafer computations were given for four terrorist organizations A,B,C and D. Suppose now that new evidence (m3) indicates that organization C was indeed responsible to a degree of 0.8. This requires that values for m3.m4 be computed, where m4=m1+m2. Compute a new intersection tableau for the new evidence, that is compute m3(C) and m3(U) versus m4(A),m4(C,A), m4(A,B,D), and m4(U).
6. Differentiate forward chaining and backward chaining with suitable example
7. Discuss in detail about dempster shafter theory.
8. a. Explain in detail about frames representation.
   b. Write short note on fuzzy reasoning, Bayesian probability, and certainty factors
9. Compute certainty factor based on hypothesis
10. Consider the following: A pea is placed under one of the three shells, and the shells are then manipulated in such a fashion that all three appear to be equally likely to contain the pea. Never less, you win a prize if you guess the correct shell, so you make a guess. The person running the game does know the correct shell, however, and uncovers one of the shells that you did not choose and that is empty. Thus, what remains are two shells: one you choose and one you did not choose. Furthermore, since the uncovered shell did not contain the pea, one of the two remaining shells does contain it. You are offered the opportunity to change your selection to the other shell. Should you? Work through the conditional probabilities mentioned in this problem using Bayes theorem. What do the results tell about what you should do?

UNIT – IV

Part- A:

1. Define planning?
2. Examine nonlinear plan.
3. List the components of planning system?
4. What is learning? What are its types?
5. What is Explanation Based Learning? How is it useful?
6. Define Inductive Bias
7. Where the Samuel's program is used
8. Explain rote learning
9. Define generalization
10. Explain credit assignment problem
11. Define STRIPS
12. State Winston's Learning Program
13. State Candidate elimination algorithm
14. Give the general framework of EBL programs
15. List the steps involved in EBG algorithm
16. List the steps involved in EBG algorithm

17. State derivation analogy
18. Define clustering
19. How AM discovered prime numbers using heuristic

Part- B:

1. What are the components of planning system and explain in detail.
2. List the Machine learning algorithms and explain in detail
3. List the steps in designing a learning system and explain them in detail
4. Discuss about various planning systems with appropriate examples
5. Discuss adaptive learning methods in detail with example
6. Solve the blocks word problem using strips. How does it act as a planning system?
7. a) Explain in detail about decision tree
   b) Explain in detail about AM and BACON
8. Briefly explain about advanced plan generation systems
9. Explain the concept of planning with state space search. How is it different from partial order planning?
10. Consider the problem of swapping the contents of two registers, A and B. Suppose that there is available the single operator ASSIGN(x, v, lv, ov) which assigns the value v, which is stored in location lv, to location x, which previously contained the value ov:ASSIGN(x,v,lv,ov) P:CONTAINS(lv,v)^CONTAINS(x,ov) D:CONTAINS(x,ov) A:CONTAINS(x,v). Assume that there is at least one additional register C, available
    a) What would STRIPS do with this problem?
    c) What would TWEAK do with this problem?
    d) How might you design a program to solve this?

UNIT – V

Part- A:

1. What are Expert Systems?
2. List the characteristic features of a expert system
3. What is the need for expert system tool while building expert system?
4. Mention some of the key applications of ES
5. Briefly explain the knowledge acquisition process
6. Explain MOLE
7. Explain Propose and revise strategy
8. What are the applications of EMYCIN
9. What are the applications of EXPERT?.
10. What are the typical components of an expert system support environment?
11. What is the use of expert system tools?
12. Name the programming languages used for expert system applications?
13. What are the types of tools available for expert system building?
14. Name the programming methods supported by expert system tools?
15. What are the knowledge representations supported by expert system tools?
16. What are the pitfalls in dealing with the domain expert?
17. Where is expert system work being done?
18. Explain XCON?
19. Name any three universities and mention the expert system tools developed there?
20. Name any three research organization and mention the expert system tools developed there?

Part- B:

1. What is an expert system shell

2. What are common pitfalls in planning an expert system
3. What is knowledge acquisition? Explain in detail
4. Discuss briefly about meta knowledge
5. Discuss briefly about the EMYCIN in detail
   a. Illustrate Heuristics with an example
   b. Classify the XOON and DART in detail and write its applications.
6. Draw the schematic diagram of an expert system. Explain all the relevant components
7. a. Explain the various stages of expert system development?
   b. Explain the tasks involved in building expert system?
8. a. Explain the role of knowledge engineer, domain expert and an end user in an expert system
   b. Explain the difficulties involved in developing an expert system
9. Solve expert system problem in terms of knowledge representation, knowledge acquisition and explanation. Give one domain in which the expert system approach would be more promising
10. a. Illustrate Heuristics with an example
    b. Classify the XOON and DART in detail and write its applications.

IT6004-SOFTWARE TESTING
QUESTION BANK
UNIT I- INTRODUCTION

PART- A

1. Differentiate verification and validation.
2. Define software process.
3. Discuss the role of process in software quality. (U.Q May/Jun 2016)
4. Compare the process of testing and debugging. (U.Q Nov/Dec 2008)
5. List the people who are associated with testing.
6. Give the information about the test case. (U.Q May/Jun 2016)
7. How would you classify the types in defect classes?
8. Define defects with an example. (U.Q Nov/Dec 2016)
9. How would you classify different levels in TMM? Also mention the key activities in each of the levels.
10. Summarize the major components in software development process.
11. Define errors,fault and failure. (U.Q Nov/Dec 2015)
12. Define process in the context of software quality. (U.Q Nov/Dec 2009)
13. List the objective of software testing and write its scope.
14. Compare activities, tasks and responsibilities (ATR). How this three are integrated?
15. Describe how the fault manifest itself as a failure?
16. Tell about test, test Oracle and Test Bed. (U.Q Apr/May 2014)
17. Identify and Classify the Quality Attribute.
18. Mention the objective of Software Testing? (U.Q Nov/Dec 2016)
19. Discuss about the approach tester support of developing a defect repository.
20. Can you Classify defect prevention strategies?
21. How would formulate the cost of defect?
22. Pointout the role of defect Repository.
23. Predict the approaches a tester should use to design effective test cases.
24. List the members of the critical groups in a testing process (U.Q Nov/Dec 2008)
25. How will you test requirement and design document?

PART- B

1. Explain in detail about defect repository. (U.Q Nov/Dec 2016)
2. Analyse tester's role in software development organization.
3. Compare and contrast terms errors, faults and failures using suitable examples.
4. Discuss about the different phases in testers mental model.
5. Discuss the origin of defects and explain defect classification in detail. (U.Q May/Jun 2016)
6. Elaborate on the principles of software testing and summarize the tester role in software development
organization.
7. Describe the various software testing activities.

8. Define correctness, reliability, integrity, interoperability.
9. Discuss how these are related to testing.
10. Define defect and illustrate the various origins of defects and explain What approach would you use to solve the concepts of defects with the coin problem?

11. Why it is important to meticulosly inspect test result? Illustrate with example and Discover the drawbacks incase if you fail to inspect.
12. Why it is necessary to develop test cases for both valid and invalid input condition and show how important to document a product?
13. Describe about the components of software development process and discuss the technological development that are causing organizations to revise their approach to testing.
14. Discuss in detail about the testing axioms.
15.Write short notes on the list given below
(i) cost of defect (ii) Defect repository (iii) defect prevention strategies.

UNIT II - TEST CASE DESIGN

PART- A

1. List some of the advantages of documentation testing and domain testing. (U.Q Apr/May 2014)
2. Which testing strategy is best to uncover the defect?
3. Pointout the difference of static testing from structural testing.
4. How mutation testing helpful in testing the software?
5. Create the equivalence classes in testing the program for quadratic equation solution.
6. Write the two basic testing strategies used to design test cases.
7. Show the need of code functional testing in test case design. (U.Q Nov/Dec 2012)
8. Define code complexity testing .How it is related to testing?
9. What do you Interpret from the control graph?
10. Discuss about desk checking.
11. List the application scope of adequacy criteria.
12. Classify test adequacy criteria .
13. How would you formulate loop testing based on strategies?
14. How would you calculate cyclomatic complexity? (U.Q Nov/Dec 2016)
15. Name the rules-of-thumb.
16. Tabulate the black box methods and knowledge sources.
17. List white box knowledge source and testing methods.
18. Tell the steps involved in developing test cases with a cause and-effect graph.
19. Can you classify the compatibility testing and explain?
20. Give the list of different types of testing.
21. List out the deliverables of requirement phase, which are considered for testing (U.Q. May/Jun 2006)
22. Why is it so important to design a test harness for reusability? (U.Q. May/Jun 2009)
23. What is a control flow graph.
24. What is unit testing.
25. What approach would you use for testing strategies?

PART- B

1. Demonstrate the various black box test cases using Equivalence class partitioning and boundary values analysis to test a module for ATM system.

2. Summarize the role of Oaths in white box testing and explain any two white box testing design.
3. Discuss briefly about path and cyclomatic complexity.
4. Describe the test factors that are to be followed to design a customized test strategy.
5. Explain in detail about the testing strategies
6. Show how black box testing is performed in COTS components?
7. Explain in detail about all additional white box test design approaches and how would you prioritize it. (U.Q Nov/Dec 2016)

8. With suitable example describe how cause-and–effect graphing and state transition testing is done. (U.Q May/Jun 2016)
9. Discuss in detail about code coverage testing.
10. Explain with neat flowchart code complexity testing.
11. What inference can you make from random testing.
12. Explain requirement based testing and domain testing. (U.Q Nov/Dec 2015)
13. Show and tabulate the comparison between static testing Vs structural testing. (U.Q Nov/Dec 2015)
14. Write short notes on the list given below:
    (i) Compatibility testing
    (ii) Documentation testing
    (iii) Domain testing
    (iv) Evaluating test adequacy criteria

UNIT III - LEVELS OF TESTING

PART- A

1. Name the various skills needed by a test specialist.
2. List out the various tools avaliable for internalization.
3. Define unit Test.Give example.
4. Compare and contrast Alpha and Beta Testing. (U.Q Nov/Dec 2016)
5. Define test harness .
6. Can you list the levels of major phases of Testing. (U.Q Nov/Dec 2015)
7. Summarize the importance to design a test harness for reusability.
8. Give the types of requirements.
9. Discuss about integration testing.
10. Based on what plan the scenario testing is done?
11. Classify the activities of defect bash.
12. Compare functional Testing from non-functional Testing.
13. Identify the elements to be tested in maintenance phase. (U.Q. May/Jun 2006)
14. Can you judge on the reason for system testing?
15. Show the test cases applied for acceptance testing.
16. How could you classify the methodology for performance testing?
17. Analyse on when to do the regression testing and smoke testing?
18. How do you categorize the parametric models used in cost estimation? (U.Q. May/Jun 2006)
19. Give the most effective ad hoc testing techniques.
20. List out the objectives of configuration testing according to Beizer.
21. Can you prepare the role of test data generators in testing object oriented system.
22. What is role of manager in support of test group? (U.Q. May/Jun 2009)

23. Show the approaches you use to do website testing.
24. What is regression testing? Give its types.
25. When is it necessary to perform regression testing and how is it done?

PART- B

1. State and describe different levels of Testing.
2. Describe in detail about scenario testing and performance testing.
3. Describe in detail about the internationalization testing and its designing and planning.
4. Summarize the issues that arise in class testing.
5. Explain about compatibility and documentation testing.

6. Develop a usecase to describe a user purchase of a laptop with credit card from a online vendor using web-based software. With use case,design a set of tests you would use during system test (U.Q. May/Jun 2009)
7. How would you classify integration testing and system testing?
8. Tabulate the key difference in integrating procedural oriented system as compared to object oriented systems.
9. Compare and contrast regression and AD-Hoc testing.
10. Show the approach you used for running the unit test and recording the results.
11. Using testing strategy and tactics, state how a testing methodology can be worked out. Explain. (U.Q. May/Jun 2006)
12. Discuss in detail about the phases in which alpha and beta testing is done ,In what way it is related to milestone and deliverable.
13. How would you identify the hardware and software for configuration testing.
14. Explain what testing techniques applied for website testing? (U.Q Nov/Dec 2016)

UNIT IV - TEST MANAGEMENT

PART- A

1. Identify business impact of globalization.
2. Show test case specification.
3. List the various skills needed by a test specialist.
4. Name the test plan components. (U.Q. May/Jun 2006)
5. What is the function of a moderator in inspecting test plans?
6. Give the need of test plan components.
7. Examine purpose of Test Transmitted report and the test log. (U.Q Nov/Dec 2015)
8. Classify various approaches to test cost estimation.
9. Pointout the five stages in a test plan process.
10. Analyse the role of manager in support of test group. (U.Q. May/Jun 2009)
11. Show the types of testing amenable to automation.
12. List test design specification.
13. How do you categorize the parametric models used in cost estimation? (U.Q. May/Jun 2006)
14 What are the parameters to be monitored for the system acceptance? (U.Q. May/Jun 2006)
15. Can you judge the three essential elements of test infrastructure management?
16. Based on test case specification what should be identified in test process.
17. How would you prepare testing and development function?
18. List any two importance of testing plan. (U.Q. May/Jun 2009)

19. Summarize the success factors for testing organization.
20. Write down the skills needed by a technical level tester.
21. Can you discuss the role of manager in support of Test group?
22. Analyse on few typical resources that are considered when test planning .
23. Write the reason to create work break down structure.
24. Can you make a distinction between structures of singleproduct companies and multi-product?
25. How will you build a testing group discuss with an example.

PART- B

1. Describe about the testing team structure for single product companies.
2. What are the skills needed for a test specialist. (U.Q Nov/Dec 2016)

3. Why is testing plan important for developing a repeatable and managed testing process? Give example.
(U.Q. May/Jun 2009)
4. Describe with example test people management.
5. Demonstrate on various stages of test plan.
6. Illustrate the role of testing.
7. Develop the challenges and issues faced in testing service organization also write how we can eliminate challenge.
8. Explain in detail the steps involved in testing the change installation process. (U.Q. May/Jun 2006)
9. Can you list the components of test plan in detail.
10. Write the list of any four IEEE recommended test related documents in detail.
11. List out the various technical skills needed by a test specialist.
12. Identify the role user/client play in the development of test plan for a project? Should they be present at any of the test plan reviews. Justify your answer. (U.Q Apr/May 2014)
14. Discuss on what is happening in test process.
15. What role do user/client play in the development of test-plan for a project? Should they be Present at any of the test plan reviews. Justify your answer. (U.Q. May/Jun 2009)
16. Demonstrate the test management based on standards, infrastructure, people and product.
17. Differentiate between the effect of globalization and geographically distributed team in product testing?

UNIT V – TEST AUTOMATION

PART- A

1. Tell about test case execution productivity?
2. Give any two metrics. Outline the challenges in automation.
3. What should be included in milestone report for testing? (U.Q. May/Jun 2009)
4. Define test automation.
5. Express the framework for test automation.
6. Classify the skills needed for automation.
7. Which method is used for testing prototypes? Why? (U.Q. May/Jun 2006)
8. What to automate? list the scope of automation.
9. List out the types of testing amenable to automation.
10. Express the information in defect database contain.
11. What is the main plan of Test framework?
12. What is the role of the tester in supporting, monitoring and controlling of testing? (U.Q. May/Jun 2009)

13. Give any two generic requirements for test tool and framework.
14. Compare product development and automation.
15. Summarize the reasons for selecting the test tool for automation.
16. Name the criteria's for selecting test tools.
17. Define test measurement process. (U.Q. May/Jun 2009)
18. List the challenges in automation.
19. Discover the objectives of testing.
20. How do structural testing methods differ from functional testing methods? (U.Q. May/Jun 2006)
21. Distinguish between milestone and deliverable.
22. Classify the types of test defect metrics.
23. Can you show on the reason why metrics in testing?

24. Can you make the comparison between metrics and measurement?
25. Give the formula for defects per 100 hours of testing.

PART- B

1. Explain the design and architecture for automation.
2. List and discuss metrics that can be used for detection prevention and how.
3. List the requirements for test tool. Explain with suitable examples.
4. Why testing in metrics? Analyse about Productivity metrics.
5. Explain the inspection procedure for the test plan execution. (U.Q. May/Jun 2006)
6. Narrate and formulate about the metrics or parameters to be considered for evaluating the software quality.
7. Explain in detail about skills needed for automation and give its challenges.
8. Discuss the significance of various measurements in the testing process.
9. If you are developing a patient record system for health care center, why of the stop test will be most appropriate for this system? (U.Q. May/Jun 2009)
10. What is the purpose of progress metrics? Describe in detail.
11. How would you classify the measurements in productivity metrics. Summarize it.
12. How metrics are classified and Demonstrate project metrics.
13. Discuss how to test the progress of the software system during maintenance? (U.Q. May/Jun 2006)
14. List out the generic requirements for Test tool/framework.
15. Illustrate the types of product metrics.