

Artificial Intelligence
(Information Technology)

Max. Marks: 70

Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

UNIT-I

1. a) Is AI a science, or is it engineering? Or neither or both? Justify your answer. 6M
 b) Illustrate Best First Search approach? How does it vary from Hill climbing method? When does this method fail to find the solution? 8M

OR

2. Apply A* heuristic search strategy for the graph in Fig 1 to find the shortest path from Initial State S to Goal State G. The heuristic values from each node to the Goal node are given in Fig 2. Also write the A* search algorithm.

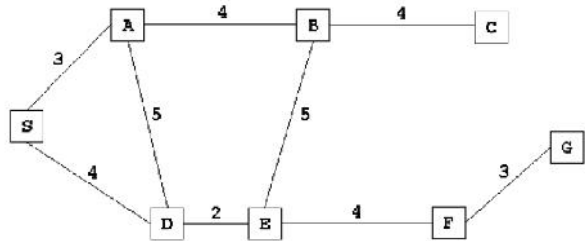


Fig 1

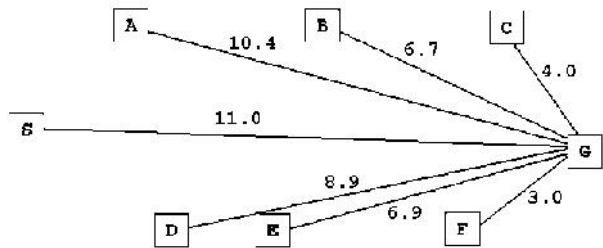


Fig 2

14M

UNIT-II

3. a) Illustrate with an example, how an intelligent agent might act and reason in a Wumpus world. 8M
 b) Describe the structure of four basic kinds of agents with internal state diagram. 6M

OR

4. a) Define Conflict resolution. Explain the three basic approaches to the problem of conflict resolution in a production system. 9M
 b) Let's consider a propositional language where
- A = "Angelo comes to the party",
 - B = "Bruno comes to the party",
 - C = "Carlo comes to the party",
 - D = "Davide comes to the party".

Formalize the following sentences:

- "Carlo comes to the party provided that Davide doesn't come, but, if Davide comes, then Bruno doesn't come"
- "Carlo comes to the party only if Angelo and Bruno do not come"
- "Davide comes to the party if and only if Carlo comes and Angelo doesn't come"

5M

UNIT-III

5. a) A problem-solving search can proceed either forward or backward. What factors determine the choice of direction for a particular problem? 6M
- b) Assume the following facts.
 Steve only likes easy courses.
 Science courses are hard
 All the courses in the basketweaving department are easy
 BK301 is a basketweaving course.
 Use resolution to answer the question, "What course would Steve like"? 8M

OR

6. a) Explain unification algorithm to unify literals. 7M
- b) Explain Resolution algorithm to determine the two literals are contradictory 7M

UNIT-IV

7. a) Explain how Bayesian statistics provides reasoning under various kinds of uncertainty 7M
- b) Explain different forms of learning 7M

OR

8. a) Differentiate between:
 i) Inductive and Deductive learning
 ii) Supervised and Unsupervised learning 8M
- b) In what way decision trees will help in learning. Provide a suitable example. 6M

UNIT-V

9. a) How are crisp sets different from fuzzy set? 6M
- b) Explain the process of neural network construction to learn a model 8M

OR

10. a) Write in detail about fuzzy control logic 9M
- b) Explain about SUGENO style for fuzzy inference processing 5M

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R-14

Code: 4G162

III B.Tech. II Semester Regular Examinations May 2017

Cryptography and Network Security

(Common to CSE & IT)

Max. Marks: 70

Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

UNIT-I

1. a) Define the following security services.
- i. Confidentiality
 - ii. Integrity
 - iii. Non-repudiation
- Suggest suitable security mechanisms to achieve them. 9M
- b) What is format string vulnerabilities? Discuss in brief. 5M

OR

2. a) Explain the following security attacks in brief with security services is/are affected by each of these attacks.
- i. Interception
 - ii. Interruption
 - iii. Modification
 - iv. Fabrication 7M
- b) Explain the Internet RFC Publication process in brief with diagram. 7M

UNIT-II

3. a) For four basic modes of operations of block ciphers analyze the effect on the decryption of remaining blocks if for the sequence of ciphertext blocks C_1, C_2, \dots, C_n some ciphertext block C_j is erroneous, $1 \leq j < n$. That is, specify which of plaintext blocks $X_j, X_{j+1}, X_{j+2}, \dots, X_n$ are received correctly. 7M
- b) Ajay chooses an RSA modulus $n = 13 \times 7 = 91$. He wants an easily-remembered encryption exponent, so he wants to use either $e = 10$ or $e = 26$ (both the numbers are in decimal). However, one of these will not work. Which one won't work and why? 7M

OR

4. a) With proper numerical example illustrate the man-in-the-middle attack against Diffie-Hellman key exchange algorithm. 7M
- b) Compare and contrast the Electronic Cook Book (ECB) and Ciphertext Block Chaining (CBC) modes of operation for block ciphers with respect to the following (use diagrams if necessary):
- Encryption
 - Decryption
 - Error propagation
 - Detection of deleted ciphertext blocks
 - Potential for repeated ciphertext blocks. 7M

UNIT-III

5. a) Explain the various fields of X.509 Certificates. Why Certificate Revocation is requiring before its expiry date? 7M
- b) Discuss the roll of TGS in Kerberos. Explain different attacks possible against Kerberos protocol. 7M

OR

6. a) Explain the different types of Authentication Procedures in X.509. 7M
- b) Explain the Kerberos protocol V4 for key distribution. Explain the functionality of each step. 7M

UNIT-IV

7. a) In Secure Socket Layer (SSL) protocol there are different protocols. One of these protocols Handshake protocol. In this protocol a logical connection is initiated between the client and server. What are the fields of client_hello message? Discuss the content/importance of each field. 7M
- b) Discuss IP Security Architecture. What are the strengths of IP Security. List the different components of IP Security. 7M

OR

8. a) Discuss various features of Secure Electronic Transaction (SET). What are the key elements of SET? Discuss in brief. 7M
- b) Discuss Authentication Header (AH) transport and tunnel mode in brief with diagram. 7M

UNIT-V

9. a) What is viruses? List and discuss various types of viruses. 7M
- b) Discuss Simple Network Management Protocol (SNMP) with respect to following key elements:
- Management station
 - Management agent
 - Management information base
 - Network Management protocol- Get, Set and Notify 7M

OR

10. a) What are the different types of intruders? Discuss each with example. What is the difference between an Intrusion Detection System (IDS) and firewall? 7M
- b) What are the different attacks possible against packet filtering firewalls? Explain each type in brief. Also discuss the countermeasures for these attacks. 7M

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R-14

Code: 4G164

III B.Tech. II Semester Regular Examinations May 2017

Computer Graphics

(Common to CSE & IT)

Max. Marks: 70

Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

UNIT-I

1. a) Explain raster scan system 7M
- b) Explain application areas of computer graphics 7M

OR

2. a) Discuss about input devices in computer graphics 7M
- b) Describe about random scan system 7M

UNIT-II

3. a) Discuss about translation, scaling, and reflection transformations in 2D 7M
- b) Describe about composite transforms and transformations between coordinate systems 7M

OR

4. a) Explain Scan Line Polygon fill algorithm. 7M
- b) What are 2D Transformations? Derive the transformation matrix for rotation about a fixed point 7M

UNIT-III

5. a) Explain Cyrus beck line clipping algorithm with an example 7M
- b) Discuss about Bezier curve and Bezier surface 7M

OR

6. a) Describe about Basic illumination models and polygon rendering methods. 7M
- b) Analyze window to view-port coordinate transformation 7M

UNIT-IV

7. a) Explain Viewing pipeline and viewing coordinates 7M
- b) Describe general projection transforms and clipping 7M

OR

8. Analyze Translation, rotation and scaling transformations with example in 3D 14M

UNIT-V

9. a) Write a short note on Computer animation. 7M
- b) Explain depth- buffer algorithm 7M

OR

10. a) Discus about scan-line visible surface detection 7M
- b) Describe BSP-tree method for hidden surface removal 7M

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R-14

Code: 4G163

III B.Tech. II Semester Regular Examinations May 2017

Linux Programming

(Common to CSE & IT)

Max. Marks: 70

Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

UNIT-I

1. a) Define a wildcard. Explain different wildcard used in LINUX with an example. 7M
- b) Discuss different security levels with relevant diagrams 7M

OR

2. a) What are the importances of Networking commands in LINUX? Explain any five with an example. 7M
- b) Explain filters and pipes used in LINUX. 7M

UNIT-II

3. a) Explain BASH and its responsibilities. 7M
- b) Describe IO redirection and here document in detail. 7M

OR

4. a) Write a note on shell variables 7M
- b) Write a shell problem to find largest of three numbers. 7M

UNIT-III

5. a) What is a file? Discuss different types of files in detail. 7M
- b) Explain briefly the system calls in files 7M

OR

6. a) Discuss different file attributes used in file system. 7M
- b) Differentiate between File locking and Record locking systems. 7M

UNIT-IV

7. a) Describe the importance of kernel support for process and process termination. 7M
- b) Distinguish between reliable and unreliable signals. 7M

OR

8. a) Discuss any five process commands with examples 7M
- b) What is a zombie process? Discuss its importance in LINUX programming. 7M

UNIT-V

9. a) Explain in detail the types of IPC under system V. 7M
- b) Discuss briefly kernel support for message queues. 7M

OR

10. a) Explain in detail kernel support for shared memory. 7M
- b) Describe UNIX system V API's for shared memory. 7M

Hall Ticket Number :

R-14

Code: 4G463

III B.Tech. II Semester Regular Examinations May 2017

Object Oriented Analysis and Design

(Common to CSE & IT)

Max. Marks: 70

Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

UNIT-I

1. a) Explain briefly the strengths and weaknesses of Object Orientation paradigm. 7M
b) How does the object-oriented view of component-level design differ from the conventional view? 7M

OR

2. a) What do you mean by visual Modeling? Explain in detail conceptual modeling of UML. 7M
b) Which of the UML diagrams are useful for analysis modeling? Provide an example of each diagram. 7M

UNIT-II

3. a) Write short notes on Packages and Interfaces. 7M
b) Differentiate classes, packages and interfaces with examples. 7M

OR

4. a) What is Class Diagram? What are the common properties and uses of class diagrams? Explain with an example 7M
b) What do you mean by Abstract classes and Instantiated Classes? How can you implement Re-Usable components with this feature? 7M

UNIT-III

5. a) Describe the weaknesses of Use-cases as part of the requirements engineering process. 7M
b) What do you mean by use case realization? Explain in detail use case realization in terms collaboration diagram along with example. 7M

OR

6. a) Explain Interaction diagrams in detail. Compare collaboration diagrams with Class and Object diagrams. 7M
b) Explain in detail the Activity diagram approaches for describing alternate flows in operational logic. 7M

UNIT-IV

7. a) What is the purpose of Collaboration diagram? Explain. 7M
b) Explain with UML notation of Interaction diagrams by considering library system as example. 7M

OR

8. a) What are the various parts of a State? Explain with an ATM example using concurrent and nested states. 7M
b) Define guard condition. How do you identify concurrent and nested states? Give an example. 7M

UNIT-V

9. a) Describe the differences between software construction and software deployment. 7M
b) Illustrate the UML deployment diagram to withdraw cash from a BANK ATM system. 7M

OR

10. a) Compare and Contrast Component and Deployment diagrams. 7M
b) Describe various types of patterns. Differentiate between Patterns and Frameworks. 7M

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R-14

Code: 4G462

III B.Tech. II Semester Regular Examinations May 2017

Software Testing Methodologies

(Information Technology)

Max. Marks: 70

Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

UNIT-I

1. a) List the factors on which the importance of the bugs depend and give the metrics for them? 7M
- b) List and explain various dichotomies in software testing 7M

OR

2. a) Why is it impossible for a tester to find all the bugs in a system? Why might it not be necessary for a program to be completely free of defects before it is delivered to its customers? 8M
- b) Describe about requirements, features and functionality bugs. 6M

UNIT-II

3. a) Explain about path instrumentation. How are link counters useful in Path Instrumentation method? 7M
- b) Define Path Testing. Explain three path testing criteria. 7M

OR

4. a) Explain path nodes and links and explain the effectiveness and limitations of path testing? 8M
- b) Explain process blocks and defines predicate and path predicates? 6M

UNIT-III

5. a) Describe briefly about transaction flow testing techniques 6M
- b) Classify what can go wrong with boundaries, then define a test strategy for each case in domain testing. 8M

OR

6. a) List and explain various transaction flow junctions and mergers? 7M
- b) Explain with a neat diagram, the schematic representation of domain testing? 7M

UNIT-IV

7. a) Describe various steps in path reduction procedure and explain their usage with a suitable example. 8M
- b) Define i) Path Sums ii) Loops iii) Applications of Path testing 6M

OR

8. a) Explain with an example the four variables KV Charts? 7M
- b) How can we determine paths in domains in Logic based testing? 7M

UNIT-V

9. a) What are the software implementation issues in state testing? 7M
- b) Describe about matrix powers and products 7M

OR

10. a) What are the principles of state testing? Discuss advantages and disadvantages 6M
- b) Explain the node reduction algorithm with respect to matrices? 8M
