G 1225

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B.TECH. DEGREE EXAMINATION, MAY 2018

Eighth Semester

Branch : Computer Science and Engineering/Information Technology

SECURITY IN COMPUTING [RT]

(Old Scheme—Prior to 2010 Admissions)

[Mercy Chance]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.
Each question carries 4 marks.

1. List the security attacks threatening integrity. Brief their impact on the system.

2. Define the three classes of intruders.

3. What are one time passwords ? State their importance, advantages and disadvantages.

4. Define security hole. Present the common categories of holes.

5. What are transposition ciphers ? Give example.

6. Compare and contrast the attacks on digital signatures with attacks on Cryptosystem.

7. What is security association ? What are the parameters that define a security association ? Give the significance of there parameters.

8. State the conditions to trust an applet downloaded from internet.

9. What does discretionary access control mean ? Give example.

10. Define inference control in a databse and illustrate with an example.

(10 × 4 = 40 marks)

Part B

Answer all questions.
Each full question carries 12 marks.

11. (a) Compare active attacks with passive attacks. (4 marks)

    (b) Discuss rule based intrusion detection approach with suitable examples. (8 marks)

Or

12. Describe the different types of viruses with examples.

Turn over

13. (a) Describe how multilevel security in OS is ensured using Bell-La Padula model with an example.

(8 marks)

(b) Discuss how authentication is done using biometrics with examples.   (4 marks)

Or

14. (a) Explain how password protection mechanism in UNIX is different from encryption.

(6 marks)

(b) Discuss how security implementation is done in windows 2000.   (6 marks)

15. Indicate the parameters and design features which are essential for the realization of classical Feistel network with a diagram.

Or

16. Explain RSA public key cryptosystem with a block diagram. Find the plain text M for the cipher text $c = 10$, sent to an user whose public key is $e = 5$ and $n = 35$.

17. (a) Explain the purpose of different elements present in X·509 certificate format using a diagram.

(5 marks)

(b) Discuss how X·509 protocol functions and the authentication procedures used.   (7 marks)

Or

18. Summaries the services provided by PGP and describe its operation and generation of PGP messages.

19. (a) Explain the methods to protect data in a database.   (6 marks)

(b) Discuss about the legal, ethical and policy related security issues in details.   (6 marks)

Or

20. (a) Present the requirements in ensuring security in databases.   (4 marks)

(b) Discuss the statistical database security, with an example.   (8 marks)

[5 × 12 = 60 marks]

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B.TECH. DEGREE EXAMINATION, MAY 2018

Eighth Semester

Branch : Computer Science and Engineering

CS 010 801—HIGH PERFORMANCE COMPUTING (CS)

(New Scheme—2010 Admission onwards)

[Regular/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

*Answer **all** questions.*

Each question carries 3 marks.

1. State Amdahl's law.

2. Define speedup of a k-stage linear-pipeline processor over an equivalent non-pipeline processor.

3. Present an outline of associative processors, using content-addressable memory.

4. What is a loosely coupled multiprocessor ?

5. Define a dynamic data flow Computer.

(5 × 3 = 15 marks)

Part B

*Answer **all** questions.*

Each question carries 5 marks.

6. Present an outline of pipeline Computers.

7. Outline the difference between a scalar pipeline and a vector pipeline.

8. Compare a SIMD single-stage dynamic network and a SIMD multistage dynamic. network.

9. Explain with an example context Switching.

10. Illustrate with a diagram instruction execution in a dataflow Computer for the computation of $a = (b + 1) * (b - c)$ by direct data forwarding.

(5 × 5 = 25 marks)

Turn over

Part C

Answer **all** *questions.*
Each full question carries 12 marks.

11. Explain with a diagram single instruction stream-multiple data stream and multiple instruction stream-multiple data stream Computer organizations.

(12 marks)

Or

12. Present an outline of Feng's classification of Computer systems in terms of parallelism exhibited by word length and bit-slice length.

(12 marks)

13. (a) Explain with a diagram the basic structure of a linear-pipeline processor.   (8 marks)

    (b) Outline with an example instruction pipelining.   (4 marks)

Or

14. What are data-dependent hazards ? Explain with an example the three classes of data-dependent hazards.

(12 marks)

15. Explain the steps in the SIMD matrix multiplication algorithm.   (12 marks)

Or

16. What is a SIMD static interconnection network? Appraise with a diagram any four SIMD static interconnection network topologies.

(12 marks)

17. (a) Explain with a diagram tightly coupled multiprocessor configuration without a private cache.

(8 marks)

    (b) Explain the multicache coherence problem.   (4 marks)

Or

18. Explain with an example how mutual exclusion and conditional synchronization can be used for process synchronization when using shared variables.

(12 marks)

19. (a) Explain with a diagram static dataflow Computer organization.   (8 marks)

    (b) Draw a data flow graph to represent the following computation :

    $z = (x + y) * 2$.   (4 marks)

Or

20. What is a data flow language? Appraise the properties of data flow languages.

(12 marks)

[5 × 12 = 60 marks]

B.TECH. DEGREE EXAMINATION, MAY 2018

Eighth Semester

Branch : Computer Science and Engineering/Information Technology

CS 010 802/IT 010 802—ARTIFICIAL INTELLIGENCE (CS, IT)

(New Scheme— 2010 Admission onwards)

[Regular/Supplementary]

Time : Three Hours   Maximum : 100 Marks

Part A

Answer all questions.
Each question carries 3 marks.

1. What are the components of well-defined problems ?

2. What is alpha beta cutoff ?

3. Apply unification algorithm and unify the literals given below ?

    hate (x, z)

    hate (Marcus.z)

4. What is Relevance Based Learning ?

5. What is the difference between expert system and conventional methods ?

(5 × 3 = 15 marks)

Part B

Answer all questions.
Each question carries 5 marks.

6. What are the constituents of a production system ?

7. Explain graph colouring problem.

8. What is modus ponens reasoning ? Explain.

9. Write a brief note on the classification of learning strategies.

10. What are the basic characteristics required for an expert system ?

(5 × 5 = 25 marks)

Turn over

Part C

*Answer **all** questions.*

Each full question carries 12 marks.

11. Describe briefly the various problem characteristics

Or

12. Discuss in detail about dictionaries in Python.

13. Explain A* Algorithm and also prove the property of admissibility in A*

Or

14. Explain the minimax algorithm.

15. Explain in detail the connectives used in propositional logic.

Or

16. Explain the forward chaining algorithm in detail.

17. Explain the concept of learning using decision trees. Also explain 1D3 Decision tree induction Algorithm.

Or

18. Write short note on the following:

    (a) Learning by taking advice

    (b) Learning in problem solving - learning by parameter adjustment, learning by chunking.

19. Explain the different stages in the development of an expert system.

Or

20. Describe the arithmetic operations of fuzzy numbers using the α-cut method.

(5 × 12 = 60 marks)

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B.TECH. DEGREE EXAMINATION, MAY 2018

Eighth Semester

Computer Science and Engineering

CS 010 803 – SECURITY IN COMPUTING (CS)

(New Scheme – 2010 Admission onwards)

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. What are the types of attacks on encrypted messages?

2. State the role of session key in public key schemes.

3. In what order should the signature function and the confidentiality function be applied to a message and why?

4. Mention the need for public and private key rings in PGP.

5. List the classes of intruders and define intrusion detection.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. How does simple columnar transposition work?

7. What is meant by 'Man in the middle attack'? Explain with neat diagrams.

8. Compare the features of SHA-1 and MD5 algorithms.

9. Brief the content types of S/MIME.

10. What are the different mechanisms available to protect files? Explain in detail.

(5 × 5 = 25 marks)

Part C

Answer all questions.

Each full question carries 12 marks.

11. Discuss any *four* substitution encryption techniques and list their merits and demerits.

Or

12. Write short notes on OSI security mechanism and OSI security services.

Turn over

13. (i) Briefly explain the design principles of block cipher.

(ii) Discuss about the avalanche effect caused by DES.

Or

14. Explain the basics of elliptic curves and its use in message encryption and decryption.

15. With a neat diagram, describe the signature generation and verification process using digital signature algorithm.

Or

16. What is Kerberos? Explain how authentication of service is done using Kerberos.

17. With a neat diagram, explain the architecture of IP security.

Or

18. Elaborate on secure electronic transaction with a neat diagram.

19. How do operating systems contribute to system security.

Or

20. Discuss the strategies available to manage passwords in detail.

(5 × 12 = 60 marks)

B.TECH. DEGREE EXAMINATION, MAY 2018

Eighth Semester

Computer Science and Engineering

CS 010 804 L05 – MOBILE COMPUTING (Elective III) [CS]

(New Scheme – 2010 Admission onwards)

[Regular/Supplementary]

Time : Three Hours　　　　　　　　　　　　　　　　　　　Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. What are the features of 3G wireless networks?

2. What are the various channel types used in GSM?

3. Compare infrared and radio transmission in Wireless LAN.

4. Why tunneling and encapsulation is required in Mobile IP?

5. What are the features of HTML?

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Explain digital audio broadcasting system.

7. What are the advantages and disadvantages of GEO and MEO systems? Explain.

8. Explain the features of infrastructure and adhoc network.

9. What is Mobile TCP? How it works?

10. Explain the features provided by WML Scripts.

(5 × 5 = 25 marks)

Part C

Answer any one full question from each module.

Each full question carries 12 marks.

11. What is handoff? Explain how handoff is handled in cellular networks.

Or

12. Describe Local Multipoint Distribution Service (LMDS) architecture. Explain its advantages and disadvantages.

Turn over

13. Describe the following :

    (i) Personal Access Communication System (PACS) architecture.

    (ii) Digital Enhanced Cordless Telecommunications (DECT).

Or

14. Explain the general satellite system for global mobile communications.

15. Describe the frame format of IEEE 802.11 along with the description of each field.

Or

16. Explain the handover and location management process in Wireless ATM.

17. What are the components of Mobile IP network and what are its functions? Explain with necessary diagram.

Or

18. What are issues of having traditional TCP over wireless networks? Explain the features of Indirect TCP and Snooping TCP which overcomes the issues of traditional TCP.

19. Explain the WWW system architecture. Explain its features.

Or

20. Write a short on :

    (i) WML features.

    (ii) Wireless Telephony Application.

(5 × 12 = 60 marks)

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B.TECH. DEGREE EXAMINATION, MAY 2018

Eighth Semester

Branch : Computer Science and Engineering/Information Technology

CS 010 805 G04/IT 010 805 G01—SOFTWARE ARCHITECTURE (Elective IV [CS, IT])

(New Scheme—2010 Admission onwards)

[Regular/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer **all** *questions.*

Each question carries 3 marks.

1. Define software architecture.

2. Why interface design should be user-centred ?

3. What is architectural formalism ?

4. Define a component. Give example.

5. What is component / connector / system paradigm ?

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*

Each question carries 5 marks.

6. Explain event based implicit invocation with an example.

7. List the basic steps in the architectural design process.

8. How a formal model of the architecture of a specific system can also be used as a basis for verification of an implementation ?

9. How to add implicit invocation to traditional programming languages ? Discuss.

10. Explain data abstraction with an example.

(5 × 5 = 25 marks)

Turn over

Part C

Answer all questions.
Each question carries 12 marks.

11. Explain with an example why software design has been described as a multistep process in which representations of data and program structure, interface characteristics, and procedural detail are synthesized from information requirements.

Or

12. What is an architectural style ? Discuss pipes and filters architectural style with an example.

13. What is user interface design ? Explain with diagrammatic illustration the user interface design process.

Or

14. What is quality function deployment (QFD) ? Discuss the managerial perspectives on QFD with a simple example.

15. How a formal model of the architecture of a specific system can describe exactly the abstractions that are of importance, without binding other implementation details ? Explain with an example.

Or

16. What is object-oriented organization architectural style ? Explain formalizing object-oriented organization architectural style with an example.

17. Highlight the features of architectural description languages and discuss the same.

Or

18. Using an architectural description language of your choice to develop a model for a library management system. State the functional requirements you are considering.

19. Discuss the features of UniCon, a language for universal connector support.

Or

20. Propose an architectural design for a banking system. State the functional requirements you are considering.

(5 × 12 = 60 marks)