B.TECH. DEGREE EXAMINATION, MAY 2014

Eighth Semester

Branch : Computer Science/Information Technology

SECURITY IN COMPUTING (RT)

(Old Scheme – Prior to 2010 Admissions)

[Supplementary/Mercy Chance]

Time : Three Hours   Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 4 marks.

1. Differentiate between a Hacker and a Cracker.

2. Give any *four* security services and explain the associated security mechanisms.

3. What do you mean by a Trusted System? Explain.

4. Explain the security features for authentication in UNIX.

5. Explain the Diffie Hellman key exchange.

6. Explain the working of the Playfair cipher.

7. What are the benefits of using IPSec?

8. Differentiate between Application level gateways and Circuit level gateways.

9. List out the advantages of providing access control through Views.

10. Explain the usage of 'GRANT' and 'REVOKE' SQL commands by giving sample queries.

(10 × 4 = 40 marks)

Part B

Answer all questions.

Each question carries 12 marks.

11. Differentiate between Polymorphic and Metamorphic worms. Also explain the mode of operation of the Morris Worm.

Or

12. Write and explain a pseudo code illustrating the structure of a Virus. Also explain the different phases of action of a Virus.

13. Differentiate between Access Control Matrix and Access Control Lists. Give the disadvantages of Access Control Matrices. What do you mean by 'Capability'?

Or

14. Explain in detail, the Biba Model of security.

15. Explain the DES cipher in detail.

Or

16. Give and explain the RSA encryption, decryption and key generation. Also prove the correctness of RSA.

17. Explain the working of Kerberos.

Or

18. Explain the functions provided by S/MIME. Also differentiate between Signed Data and Clear-signed Data.

19. Explain the SQL security model in detail.

Or

20. What is a statistical database? What do you mean by 'Aggregation' and 'Inference'? What are the types of attacks possible on a statistical database due to the Inference problem?

(5 × 12 = 60 marks)

G 804　　　　　　　　　　(Pages : 2)　　　　　　Reg. No...........................

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B.TECH. DEGREE EXAMINATION, MAY 2014

Eighth Semester

Branch : Computer Science and Engineering

HIGH PERFORMANCE COMPUTING (R)

(Old Scheme – Prior to 2010 Admissions)

[Supplementary/Mercy Chance]

Time : Three Hours　　　　　　　　　　　　　　　　　　Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 4 marks.

1. What is meant by Pipelining?

2. What are dataflow computers?

3. Derive an expression for pipeline efficiency.

4. Suggest a method for detecting hazards in pipelines. Explain how RAW hazards are resolved in IBM systems.

5. Distinguish between Shared memory SIMD and Interconnected SIMD systems.

6. What are associative array processors?

7. Give some advantages of cross-point interconnection network when compared to time shared bus.

8. Write short notes on vectorising compiler.

9. What are the disadvantages of dataflow computing?

10. Explain the basic organization of Dynamic dataflow computer.

　　　　　　　　　　　　　　　　　　　　　　　　　　　　(10 × 4 = 40 marks)

Part B

Answer all questions.

Each question carries 12 marks.

11. Explain the different parallel processing architectural configurations.

Or

Turn over

12. Write notes on :

   (i) Flynn's classification.

   (ii) Indian contribution to parallel processing.

13. Explain the effect of branch instructions on the performance of a pipeline computer which uses instruction level pipeline.

Or

14. Explain the Internal forwarding and Register tagging techniques for improving the performance of computers with multiple execution pipelines.

15. How can we implement matrix multiplication on a SIMD computer with n PE's. Give the algorithm. What is the time complexity of the algorithm?

Or

16. Explain parallel memory allocation technique for enhancing the performance of SIMD computers.

17. With neat figures, explain the two architectural models for a multiprocessor system. Explain how communication is carried out in both systems.

Or

18. Analyze the possibilities of coherent problem in a multiprocessor system with private caches. Explain anyone static coherence check method used for solving the coherence problem.

19. Explain the architecture of a static dataflow machine.

Or

20. Explain the design alternatives used in dataflow computer design.

(5 × 12 = 60 marks)

G 816

(Pages : 2)

Reg. No..........................

Name..........................

B.TECH. DEGREE EXAMINATION, MAY 2014

Eighth Semester

Branch : Computer Science and Engineering

PRINCIPLES OF PROGRAMMING LANGUAGES (R)

(Old Scheme—Prior to 2010 Admissions)

[Supplementary/Mercy Chance]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.
Each question carries 4 marks.

1. What do you mean by readability, writability and orthogonality of a programming language ?

2. Explain the structure of a typical language implementation.

3. Write a note on type conversion and coersion.

4. What are the major attributes for specifying data structure types ? Explain.

5. Define abstract data types. Give an example.

6. What are generic subprograms ? What are their advantages ?

7. How is recursion implemented ?

8. Differentiate static and dynamic scope of an association for an identifier.

9. What are coroutines ? How control is transferred between coroutines ?

10. Write a note on the principles of parallel programming languages.

(10 × 4 = 40 marks)

Part B

Answer all questions.
Each question carries 12 marks.

11. What do you mean by programming environment ? Explain how programming environments have affected the language design.

Or

12. Write notes on :

(i) Virtual computers.

(ii) Binding times.

Turn over

13. Explain the implementation of elementary data types.

                                        Or

14. Explain the specification of structured data types.

15. Explain the semantics for Prefix, Postfix and Infix expressions.

                                        Or

16. Explain the sequencing of compound, conditional and iterative statements with reference to
     structured sequence control.

17. Explain the implementation of the local referencing environment of a subprogram.

                                        Or

18. Explain the following :—

         (i)   Inheritance

        (ii)   Polymorphism

19. Explain the task synchronization in parallel programming languages.

                                        Or

20. Explain how exceptions are handled in Java.

                                                        (5 × 12 = 60 marks)

B.TECH. DEGREE EXAMINATION, MAY 2014

Eighth Semester

Branch : Computer Science and Engineering/Information Technology

ARTIFICIAL INTELLIGENCE (R, T)

(Old Scheme—Prior to 2010 Admissions)

[Supplementary/Mercy Chance]

Time : Three Hours   Maximum : 100 Marks

Part A

Answer all questions.
Each question carries 4 marks.

1. What are the requisites for an AI representation language ?

2. Briefly explain the propositional calculus semantics.

3. Explain the depth first search with iterative deepening.

4. What is meant by informedness of a heuristic ? Explain.

5. State the conditions under which admissibility of a heuristic imply monotonicity.

6. Differentiate between inheritable knowledge and relational knowledge.

7. Explain how backward chaining rule system can be used for goal directed problem solving.

8. Explain how heuristics can be used in constraint satisfaction problem.

9. Explain the need for using meta-predicates in PROLOG.

10. Discuss the use of semantic nets in PROLOG.

(10 × 4 = 40 marks)

Part B

Answer all questions.
Each question carries 12 marks.

11. Explain the bidirectional search algorithm and uniform cost search algorithm. Also compare the performance.

Or

12. Explain the breadth first search algorithm and depth first search algorithm. Give an example of a problem for which depth first search would work better than the former one.

Turn over

13. Explain A* algorithm and substantiate how it is capable of generating an optimal solution in an AI problem.

Or

14. Explain the steepest ascent hill climbing algorithm.

15. Discuss the use of semantics and frames in knowledge structures.

Or

16. Explain alpha-beta pruning. Also explain how it improves the search efficiency in two person games.

17. Distinguish between default reasoning and minimalist reasoning.

Or

18. Explain the unification algorithm.

19. Explain in detail the various abstract data types in PROLOG.

Or

20. Explain how best first search is carried out in PROLOG.

(5 × 12 = 60 marks)

G 855

Reg. No...................................

Name...................................

B.TECH. DEGREE EXAMINATION, MAY 2014

Eighth Semester

Branch : Computer Science and Engineering/Information Technology

CLIENT-SERVER COMPUTING (Elective II) (R T)

(Old Scheme—Prior to 2010 Admissions)

[Supplementary/Mercy Chance]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer **all** *questions.*

Each question carries 4 marks.

1. Write down the features of client server computing.

2. What are the main components of client server computing ?

3. Explain briefly about any *two* client server interaction protocols.

4. Write short notes on Remote Procedure Call.

5. What are the advantages of multitasking ?

6. What is the use of Threads ?

7. Explain briefly about multilevel feedback queue scheduling.

8. What is a semaphore? What are its operations ?

9. Write briefly about the concept of web services.

10. What is the role of network protocols in communication ?

(10 × 4 = 40 marks)

Part B

Answer **all** *questions.*

Each question carries 12 marks.

11. Write briefly about the various costs in implementing a client server system.

Or

12. Briefly explain the architecture of client server databases ? What are its advantages ?

13. What are the various ways of optimizing applications for client server ?

Or

14. Illustrate client server implementation with an example.

Turn over

15. (a) Differentiate between Process and Threads.

    (b) Explain about user and kernel threads.

Or

16. Explain briefly about multitasking in Novell Netware.

17. Explain briefly about context switching with a neat labeled diagram.

Or

18. Write briefly on :

    (a) A SJF Scheduling.

    (b) Priority Scheduling

19. Explain briefly the different techniques of inter process communication.

Or

20. Discuss about client server applications.

(5 × 12 = 60 marks)

G 890   (Pages : 2)   Reg. No...............................

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B.TECH. DEGREE EXAMINATION, MAY 2014

Eighth Semester

Branch : Computer Science and Engineering / Information Technology

NEURAL NETWORKS (Elective III) (R, T)

(Old Scheme—Supplementary/Mercy Chance—Prior to 2010 Admissions)

Time : Three Hours   Maximum : 100 Marks

Part A

Answer all questions briefly.
Each question carries 4 marks.

1. Distinguish between supervised learning and unsupervised learning techniques.
2. Write the algorithm for perception learning rule.
3. What is meant by temporal instability? Explain.
4. What is K-means algorithm? Explain.
5. Explain the operation of Grossberg layer.
6. How the weights of output layer are adjusted in back propagation training?
7. Explain the need for negative phase and its implications in Boltzmann learning.
8. Explain the limitations of Boltzmann training.
9. Compare continuous BAM and adaptive BAM.
10. What are the advantages of recurrent networks?

                                             $(10 \times 4 = 40 \text{ marks})$

Part B

Answer all questions.
Each full question carries 12 marks.

11. (a) What is multilayer perceptron? Explain how it can solve XOR problem.   (6 marks)

     (b) Explain the architectural graph of a multilayer perception with two hidden layers. (6 marks)

Or

12. (a) How to activate the functions of neurons? Explain different types of activation methods.

                                                            (6 marks)

     (b) Explain perceptron convergence theorem.   (6 marks)

13. Initialize a perception with zero weights. Use input patterns (0, 0) (0, 1) (1, 0), (1, 1) as training data for two class problem and assign two pattern to each class (use targets + 1, – 1). Illustrate the training procedure for one set pattern. Check whether at the end of the epoch the pattern are classified.

Or

14. With neat diagrams, explain neural network based model reference adaptive control.

                                                            Turn over

15. Draw the structure of a feed forward MLP with a single hidden layer. Write down the expression for the output vector y^o as a function of the input vector x. Show that if both layers (hidden and output) of the above MLP use linear activations, the two layer network is equivalent to a single layer network.

Or

16. Explain the applications where counter propagation networks are superior to other networks.

17. Explain simulated annealing. Explain how the principle of simulated annealing is useful for stochastic machines.

Or

18. (a) With necessary examples, describe Cauche training.   (6 marks)

    (b) Derive back propagation algorithm. What are its applications?   (6 marks)

19. (a) Explain the method of character retrieval using Hopfield networks.   (8 marks)

    (b) What is a recurrent network? What are its uses?   (4 marks)

Or

20. Explain how a Hopfield network can be approximated as a gradient system and an autoassociative system.

                                                                                                        [5 × 12 = 60 marks]

B.TECH. DEGREE EXAMINATION, MAY 2014

Eighth Semester

Branch : Computer Science and Engineering

CS 010 803 – SECURITY IN COMPUTING (CS)

(New Scheme–2010 Admissions)

[Regular]

Time : Three Hours Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. What do you mean by Rail Fence cipher?

2. What is meant by block cipher?

3. What is message authentication code?

4. What do you mean by Encapsulating Security Payload?

5. List and define tree classes of intruders.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Write a note on classical encryption techniques.

7. Briefly describe Public Key Cryptography.

8. Discuss the Kerberos Version–5.

9. Explain the operational description of PGP.

10. Write a note on Password Management.

(5 × 5 = 25 marks)

Part C

Answer all questions.

Each question carries 12 marks.

11. Explain about the security attacks and its service mechanism.

Or

12. Discuss any *two* substitution cipher encryption methods.

13. Draw the general structure of simple DES and explain how encryption and decryption are carried out. Also mention the strength and weakness of DES algorithm.

Or

14. Describe the steps of Diffie-Hellman key exchange algorithm.

15. What are the two types of digital signature? Explain each briefly. Also explain the digital signature algorithm and the digital signature system.

Or

16. What are Kerberos? Explain. Also explain the X.509 authentication service.

17. What are transport mode and tunnel mode authentication in IP? Explain. How ESP is applied to both these modes?

Or

18. Explain the following :

    (a) Application level gateway.

    (b) Circuit level gateway.

19. Briefly describe file protection mechanism.

Or

20. What are viruses? Explain the virus related threats and the counter measures applied.

(5 × 12 = 60 marks)

B.TECH. DEGREE EXAMINATION, MAY 2014

Eighth Semester

Branch : Computer Science and Engineering / Information Technology

CS 010 802 / IT 010 803 – ARTIFICIAL INTELLIGENCE (CS, IT)

(New Scheme–2010 Admissions)

[Regular]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer **all** *questions.*

Each question carries 3 marks.

1. Mention any two features of python.

2. What are OR graphs?

3. What are predicates?

4. What is learning?

5. Write a note on domain knowledge.

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*

Each question carries 5 marks.

6. Discuss Production system with an example.

7. Write a note on MIN MAX procedure.

8. Explain backward chaining with an example.

9. Describe the learning by chunking.

10. Differentiate Ordinary sets and Fuzzy sets.

(5 × 5 = 25 marks)

Part C

Answer **all** *questions.*

Each question carries 12 marks.

11. Implement hill climbing using Python.

Or

12. Explain the significance of search methods in AI with an example.

13. Explain the A* algorithm.

<div align="center">*Or*</div>

14. Explain the method of problem reduction using AND-OR graphs.

15. Explain the unification algorithm with an example.

<div align="center">*Or*</div>

16. Discuss the importance of predicate logic in knowledge representation.

17. Explain learning by parameter adjustment using an example.

<div align="center">*Or*</div>

18. Explain the ID3 decision tree induction algorithm.

19. Describe how fuzzy sets are useful in implementing fuzzy logic.

<div align="center">*Or*</div>

20. How do you use and represent domain knowledge in an expert system?

<div align="right">(5 × 12 = 60 marks)</div>

G 1021　　　　　　　　(Pages : 2)　　　　　　Reg. No...............................

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B.TECH. DEGREE EXAMINATION, MAY 2014

Eighth Semester

Branch : Computer Science and Engineering

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

(New Scheme–2010 Admissions)

[Regular]

Time : Three Hours　　　　　　　　　　　　　　　　　Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. Write a note on 2G TDMA standards.

2. What multiplexing schemes are applied in DECT?

3. How mobility is restricted using WLANs?

4. What are the requirements of mobile IP?

5. State the requirements of WAP.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Explain the concept of digital audio broadcasting.

7. Explain the various handover scenarios in GSM.

8. Write a note on Access point control protocol (APCP).

9. What are the advantages of IPv6 over IPv4?

10. Why has a scripting language been added to WML? How can this language help saving bandwidth and reducing delay?

(5 × 5 = 25 marks)

Turn over

Part C

Answer all questions.
Each full question carries 12 marks.

11. Differentiate Cell splitting and Cell sectoring techniques.

(12 marks)

Or

12. (a) Explain multimedia object transfer protocol.

(b) What is mobile assisted hand off (MAHO)?

(6 + 6 = 12 marks)

13. Explain GSM architecture.

(12 marks)

Or

14. (a) What are the distinguishing features in wireless communication using QEO and LEO satellites?

(b) How is synchronization achieved in GSM? Why it is so important?

(6 + 6 = 12 marks)

15. (a) Compare IEEE 802.11 with 802.16.

(b) Discuss the applications of Bluetooth.

(9 + 3 = 12 marks)

Or

16. (a) Discuss various handover scenarios used in Wireless ATM.

(b) Explain the features of radio transmission.

(8 + 4 = 12 marks)

17. (a) Discuss the routing algorithm in ad-hoc network.

(b) Explain tunneling and encapsulation in mobile IP.

(6 + 6 = 12 marks)

Or

18. Explain in detail about traditional TCP and also discuss about snooping TCI.

(12 marks)

19. Write a note on :

(a) Wireless Application Environment (WAE).

(b) Wireless markup language.

(6 + 6 = 12 marks)

Or

20. Explain WWW system architecture.

(12 marks)

[5 × 12 = 60 marks]

G 1056

Reg. No.................................

Name.................................

B.TECH. DEGREE EXAMINATION, MAY 2014

Eighth Semester

Branch : Computer Science and Engineering

CS 010 805 G01 – MULTIMEDIA TECHNIQUES (Elective IV) [CS]

(New Scheme–2010 Admissions)

[Regular]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. What are the Components of Multimedia? Explain.

2. What is SPHIT?

3. Write a note on video compression.

4. How should we Retrieve Images?

5. Explain TV trees.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. Differentiate Multimedia and Hypermedia.

7. Write a note on Dictionary-Based coding.

8. Explain JPEG-LS standard.

9. What is the available querying on videos?

10. Write a note on word stems and frequency table.

(5 × 5 = 25 marks)

Part C

Answer all questions.

Each question carries 12 marks.

11. What are the different Graphics/Image data types?

Or

12. What is MIDI? Explain the Structure of MIDI Messages.

13. What are Distortion measures? Explain Rate Distortion theory.

Or

14. Explain arithmetic coding in detail.

15. How layer hierarchy works in MPEG? Explain.

Or

16. Explain the different Audio compression techniques.

17. What is the available querying on videos?

Or

18. Explain Image Processing Segmentation.

19. Briefly explain Indexing SMDSs with enhanced inverted indices.

Or

20. Explain organizing multimedia data based on the principle of uniformity.

(5 × 12 = 60 marks)