

**F 3819**

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Reg. No.....

Name.....

**B.TECH. DEGREE EXAMINATION, NOVEMBER 2016**

**Eighth Semester**

Branch : Computer Science and Engineering

CS 010 801—HIGH PERFORMANCE COMPUTING (CS)

(New Scheme—2010 Admission onwards)

[Supplementary]

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 3 marks.*

1. Differentiate between parallelism and pipelining.
2. Give the reasons for using non-linear pipelines.
3. What are multiprocessor memories ? State its uses.
4. Define semaphore ? State its role in multiprocessing.
5. State the significances of data driven computing.

(5 × 3 = 15 marks)

**Part B**

*Answer all questions.*

*Each question carries 5 marks.*

6. Explain Bernstein condition for parallel execution.
7. Draw the two models of linear pipeline units and the corresponding reservation tables. Explain the components briefly.
8. Discuss about the parameters used for comparing array processors.
9. Write the functionalities of local bus, backplane bus, I/O bus and hierarchical buses.
10. Explain the compilation phases in parallel code generation.

(5 × 5 = 25 marks)

**Part C**

*Answer all questions.*

*Each full question carries 12 marks:*

11. Explain how parallelism can be achieved in uniprocessor systems.

Or

12. Describe about the three shared memory multiprocessor models.

**Turn over**

13. Explain Tomasulo's algorithm for dynamic instruction scheduling.

Or

14. Discuss about the principles behind the design of pipeline processors.

15. Explain cube interconnection network with 8 nodes and give its routing functions.

Or

16. Write an algorithm that sort 'n' integers in parallel on array processors.

17. Express the functionalities and structure of crossbar switches and multiport memory briefly.

Or

18. Discuss about the six categories of language features for parallel programming.

19. Compare the architectures of control flow and data flow computers.

Or

20. Explain static and dynamic data flow machines in detail.

(5 × 12 = 60 marks)

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Reg. No.....

Name.....

**B.TECH. DEGREE EXAMINATION, NOVEMBER 2016**

**Eighth Semester**

Branch : Computer Science and Engineering/Information Technology

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

(New Scheme—2010 Admission onwards)

[Supplementary]

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 3 marks.*

1. How uninformed search algorithms work ?
2. Define constraint satisfaction problem.
3. Translate the sentence "Every man is mortal" into predicate logic formula.
4. What are rote learning systems ?
5. Define a fuzzy set. Give example.

(5 × 3 = 15 marks)

**Part B**

*Answer all questions.*

*Each question carries 5 marks.*

6. Explain why generate-and-test search strategy is acceptable for simple problems and inefficient for problems with large space.
7. What is alpha-beta pruning ? Discuss.
8. Explain unification with example.
9. Discuss learning from examples with suitable illustration.
10. What is an expert system ? Discuss.

(5 × 5 = 25 marks)

**Part C**

*Answer all questions.*

*Each full question carries 12 marks.*

11. Discuss with example goal-driven search in a production system.

Or

Turn over

12. What is hill climbing search ? How does it work ? Illustrate each step of the hill climbing search algorithm with an example and diagrammatic illustration.
13. Present a Python implementation of best-first search algorithm and discuss the same with an example.

Or

14. Explain the AO\* algorithm for searching AND-OR graph with example. Illustrate each step of the algorithm with diagrammatic illustration.
15. What is resolution ? Discuss with example resolution in propositional logic and predicate logic.

Or

16. Explain with example inference in rule-based systems using forward chaining and backward chaining.
17. Discuss Winston's learning program with example and diagrammatic illustration.

Or

18. What is a decision tree ? Explain with an example ID3 decision tree induction algorithm.
19. What are fuzzy numbers ? Explain with example and diagrammatic illustration operations on fuzzy numbers.

Or

20. What are the major activities of expert system construction and use ? How expert systems work ? Discuss.

(5 × 12 = 60 marks)

F 3841

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Reg. No.....

Name.....

**B.TECH. DEGREE EXAMINATION, NOVEMBER 2016**

**Eighth Semester**

Branch : Computer Science and Engineering

CS 010 803—SECURITY IN COMPUTING (CS)

(New Scheme—2010 Admission onwards)

[Supplementary]

Time : Three Hours

Maximum : 100 Marks

**Part A**

Answer all questions.

Each question carries 3 marks.

1. What are the basic components of computer security ?
2. Differentiate between public key and symmetric key cryptography.
3. What is a hash function ?
4. What is a firewall ?
5. How to protect passwords ?

(5 × 3 = 15 marks)

**Part B**

Answer all questions.

Each question carries 5 marks.

6. How play fair cipher is used for encryption ? Give an example.
7. What is Fermat's theorem ? Why it is used ?
8. What is a digital signature? What is the purpose of using it ?
9. Why we need packet filters ? Explain.
10. Explain the memory and address protection techniques used in operating systems.

(5 × 5 = 25 marks)

**Part C**

Answer all questions.

Each full question carries 12 marks.

11. Explain any three attacks in computer network and briefly mention the solutions to overcome the same.

Or

Turn over

12. Write a note on :

- (a) Vigenere cipher.
- (b) Rail Fence cipher.

13. With an example, explain how the encryption and decryption of data is done using RSA algorithm.

Or

14. Explain Elliptic curve cryptography. Mention its advantages over RSA.

15. Explain any *one* secure hash algorithm.

Or

16. How to provide authentication in application level ? Explain any *one* such technique in detail.

17. What techniques are used in web applications to provide security in transport layer ? Explain.

Or

18. Explain security architecture of IP.

19. Explain any *one* security model for Operating System.

Or

20. In what way, access control for objects provides security in Operating Systems ? Explain.

(5 × 12 = 60 marks)

**F 3863**

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Reg. No.....

Name.....

**B.TECH. DEGREE EXAMINATION, NOVEMBER 2016**

**Eighth Semester**

Branch : Computer Science and Engineering

CS 010 804 L01—E-COMMERCE (Elective III) [CS]

(New Scheme—2010 Admission onwards)

[Supplementary]

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 3 marks.*

1. Discuss the role of Internet Service Providers in E-commerce.
2. Briefly explain the working of a Payment Gateway.
3. Briefly differentiate between HTML and XHTML.
4. Discuss the different models of E-Commerce.
5. What is MIME ? What are the four different header fields defined in the MIME specification ?

(5 × 3 = 15 marks)

**Part B**

*Answer all questions.*

*Each question carries 5 marks.*

6. Write a note on the architectural framework of electronic commerce.
7. What is Just-in-time manufacturing ? Explain.
8. Discuss the different types of Client-Server threats on a network.
9. List the various kinds of digital documents.
10. Briefly discuss the concepts of the Video-conferencing technology.

(5 × 5 = 25 marks)

**Part C**

*Answer all questions.*

*Each full question carries 12 marks.*

11. Write a detailed note on Switched Multimegabit Data Service.

*Or*

12. What are frame and cell relays ? Discuss the advantages and disadvantages of frame relays. Explain the structure of a frame.

**Turn over**

13. Explain the process of designing Electronic Payment Systems in detail.

Or

14. Write a note on digital token based Electronic Payment Systems. Explain the main components and their role, with a neat diagram.

15. What are the EDI standards developed for business ? What are the legal, security and privacy issues involved ?

Or

16. What is Financial EDI ? Discuss the working of various types of financial EDI.

17. Briefly discuss the Mercantile Process Model from Merchant's and consumer's perspective.

Or

18. What is a smart card ? Briefly discuss the main components of a smart card, as per its type with a neat diagram.

19. What is workflow automation and co-ordination achieved in electronic business systems ? Explain.

Or

20. What is SCM ? With a neat diagram, explain the concept of push and pull based SCM.

(5 × 12 = 60 marks)



**F 3866**

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**B.TECH. DEGREE EXAMINATION, NOVEMBER 2016**

**Eighth Semester**

Branch : Computer Science and Engineering

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

(New Scheme—2010 Admission onwards)

[Supplementary]

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.  
Each question carries 3 marks.*

1. What is hand-off strategy ?
2. Explain GEO satellite system.
3. Explain services of wireless ATM.
4. What are requirements of Mobile IP ?
5. Write a note on WWW.

(5 × 3 = 15 marks)

**Part B**

*Answer all questions.  
Each question carries 5 marks.*

6. Explain 2G CDMA standards.
7. Explain features of GSM.
8. Compare 802.11 and 802.16.
9. Explain dynamic source routing
10. Explain features of WMI.

(5 × 5 = 25 marks)

**Turn over**

**Part C**

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

11. Explain Digital Audio Broadcasting and Digital Video Broadcasting.  
*Or*
12. Explain Cellular concepts.
13. Explain signal processing in GSM and DECT.  
*Or*
14. Explain the Architecture of PACS.
15. Explain the Services, Reference model and Functions of wireless ATM.  
*Or*
16. Explain Bluetooth architecture.
17. Explain traditional TCP indirect TCP and Mobile TCP.  
*Or*
18. Explain : (i) Dynamic host configuring protocol ; (ii) Reverse tunneling.
19. Explain the Architecture of WAP.  
*Or*
20. Explain WWW System Architecture.

(5 × 12 = 60 marks)

**F 3904**

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**B.TECH. DEGREE EXAMINATION, NOVEMBER 2016**

**Eighth Semester**

Branch : Computer Science and Engineering/Information Technology

CS 010 805 G 02/IT 010 805 G 05—NEURAL NETWORKS (Elective IV) [CS, IT]

(New Scheme—2010 Admission onwards)

[Supplementary]

Time : Three Hours

Maximum : 100 Marks

**Part A**

*Answer all questions.*

*Each question carries 3 marks.*

1. What is pattern association ?
2. What are the limitations of Back propagation algorithm ?
3. Explain Radial Basis Architecture.
4. What is Maxnet competitive networks ?
5. What are the various types of associative networks ?

(5 × 3 = 15 marks)

**Part B**

*Answer all questions.*

*Each question carries 5 marks.*

6. What are the basic learning laws ?
7. Distinguish between classification and clustering.
8. What is the purpose of using bias and variance in neural networks ?
9. How to perform learning in self organizing maps ?
10. Explain the architecture of auto associative networks.

(5 × 5 = 25 marks)

**Part C**

*Answer all questions.*

*Each full question carries 12 marks.*

11. Derive some attractive features of the biological neural network that make it superior to the most sophisticated artificial intelligence computer system for pattern recognition tasks.

*Or*

12. Explain Hebbian and Delta learning laws.

**Turn over**

13. Explain the process of forward and backward pass in back propagation model.

Or

14. Derive the Back propagation algorithm for classification.

15. What is the purpose of using Boltzmann Machine ? Explain its structure.

Or

16. Explain the features and structure of stochastic neural networks.

17. Explain Hamming Net and fixed weight competitive networks.

Or

18. Explain the architecture of Kohonen's self organizing map.

19. With an example, explain the application of bidirectional associative memory.

Or

20. Explain reliability analysis of Hopfield networks.

(5 × 12 = 60 marks)

F 3942

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Reg. No.....

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**B.TECH. DEGREE EXAMINATION, NOVEMBER 2016.**

**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. What is the role of authenticity and accountability in computer security ?
2. What is Trojan horse and worm attack ? Explain.
3. How intruder effects the security of operating System ? Explain.
4. In what way the protection domain can provide security for operating systems ? Explain.
5. Explain RSA algorithm.
6. What is Digital Signature ? What are its advantages ?
7. Explain the operation of Secure Socket Layer.
8. What are the various design goals of firewalls ?
9. Differentiate between data security and data precision.
10. What are three dimensional views of database integrity and reliability ?

(10 × 4 = 40 marks)

**Part B**

*Answer all questions.*

*Each full question carries 12 marks.*

11. What are the two major types of security attacks ? Explain various subtype of attacks in each major type of attack.

*Or*

12. Explain in detail, various security mechanisms used in computer security.

Turn over

13. With an example, explain how access control provides security in operating System.

Or

14. Compare between Bell-La Padula Model with the Biba model. Explain the advantage and disadvantage of both models.

15. Explain the structure of DES algorithm in detail.

Or

16. Write a note on :

(i) Secure Hash Function (SHA)

(ii) Crypt analysis.

(iii) Confusion and Diffusion.

17. How does PGP (Pretty Good Privacy) provide trust in Email services ? Explain in detail.

Or

18. Write a note on :

(i) X.509 Architecture Service.

(ii) Applet Security.

19. What is the need for Mandatory Access Control (MAC) ? In what way it provides security for database ? Explain in detail.

Or

20. Write a short note on :

(i) Database security issues.

(ii) Statistical database security.

(5 × 12 = 60 marks)

F 3903

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**B.TECH. DEGREE EXAMINATION, NOVEMBER 2016**

**Eighth Semester**

Branch : Computer Science and Engineering

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

(New Scheme—2010 Admission onwards)

[Supplementary]

Time : Three Hours

Maximum : 100 Marks

**Part A**

Answer all questions.  
Each question carries 3 marks.

1. Digital video uses chroma subsampling. What is the purpose of using this ? Why is it feasible for digital video ?
2. What are the advantages of Adaptive Huffman Coding compared to the original Huffman Coding algorithm ?
3. Differentiate MPEG1 and MPEG2.
4. List any three retrieval techniques for text/document databases.
5. What are alternative image DB paradigms ?

(5 × 3 = 15 marks)

**Part B**

Answer all questions.  
Each question carries 5 marks.

6. Explain SMIL with a sample code.
7. Explain Karhunen-Loeve Transform.
8. Explain Shape Adaptive DCT (SA-DCT) - based coding for Boundary Macroblocks.
9. Write the properties of TV-Trees.
10. Explain Similarity based retrieval for image databases.

(5 × 5 = 25 marks)

Turn over

Part C

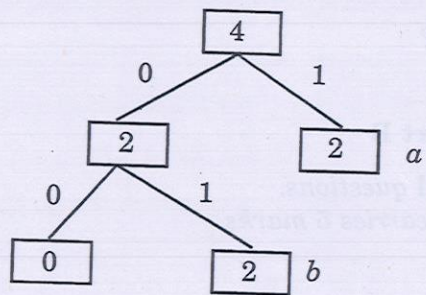
Answer all questions.  
Each question carries 12 marks.

11. (a) Can a single MIDI message produce more than one note sounding?
- (b) Is it possible for more than one note to sound at once on a particular instrument? If so, how is it done in MIDI?
- (c) Is the Program Change MIDI message a Channel Message? What does this message accomplish? Based on the Program Change message, how many different instruments are there in General MIDI? Why?
- (d) In general, what are the two main kinds of MIDI messages? In terms of data, what is the main difference between the two types of messages? Within those two categories, list the different subtypes.

Or

12. Draw a diagram showing a sinusoid at 5.5 kHz and sampling at 8 kHz (show eight intervals between samples in your plot). Draw the alias at 2.5 kHz and show that in the eight sample intervals, exactly 5.5 cycles of the true signal fit into 2.5 cycles of the alias signal.

13.



Assume that Adaptive Huffman Coding is used to code an information source S with a vocabulary of four letters (a, b, c, d). Before any transmission, the initial coding is a ; : 00, b ; : 01, c ; : 10, d ; : 11. As in the example illustrated in above Figure 1, a special symbol NEW will be sent before any letter if it is to be sent the first time.

Figure 1 is the Adaptive Huffman tree after sending letters aabb. After that, the additional bit stream received by the decoder for the next few letters is 0 1 0 1 0 0 1 0 1 0 1.

- (i) What are the additional letters received?
- (ii) Draw the adaptive Huffman trees after each of the additional letters is received.

Or

14. Explain the dictionary-based LZW compression algorithm. Suppose the alphabet is the set of symbols {0, 1}. Show the dictionary (symbol sets plus associated codes) and output for LZW compression of the input 0 1 1 0 0 1 1.
15. Explain Channel Vocoder with a neat diagram.

Or

16. (a) If JPEG uses the Discrete Cosine Transform (DCT) for image compression.
  - (i) What is the value of  $F(0, 0)$  if the image  $f(i, j)$  is as below?
  - (ii) Which AC coefficient  $|F(u, v)|$  is the largest for this  $f(i, j)$ ? Why? Is this  $F(u, v)$  positive or negative? Why?

20	20	20	20	20	20	20	20
20	20	20	20	20	20	20	20
80	80	80	80	80	80	80	80
80	80	80	80	80	80	80	80
140	140	140	140	140	140	140	140
140	140	140	140	140	140	140	140
200	200	200	200	200	200	200	200
200	200	200	200	200	200	200	200

- (b) Show in detail how a three-level hierarchical JPEG will encode the image above, assuming that:
  - (i) The encoder and decoder at all three levels use Lossless JPEG.
  - (ii) Reduction simply averages each  $2 \times 2$  block into a single pixel value.
  - (iii) Expansion duplicates the single pixel value four times.

17. Discuss in detail about raw input image format.

Or

18. Explain R-Tree Constriction and Representation.
19. Explain media abstraction for multimedia databases in detail.

Or

20. Explain latent semantic indexing for text/document databases.

(5 × 12 = 60 marks)