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8E8161

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8E8161

B.Tech. VIII Semester (Main) Examination, May 2016

Computer Science & Engineering

8CS1A Mobile Computing

Common with 8IT4.1

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly).*

Unit - I

1. a) Discuss principles and techniques of location management in regards of mobile computing **(8)**

   b) What do you mean by mobile computing? Explain it with various adaptability issues **(8)**

OR

1. a) What is mobility management? Describe mechanism for adaptation **(8)**

   b) Discuss public communication services location management with suitable example **(8)**

Unit - II

2. a) Describe caching management in mobile and cache management schemes **(8)**

   b) What do you mean by data dissemination and explain its model **(8)**

OR

2. a) Explain operation of mobile IP. Why tunneling is used in mobile IP **(8)**

   b) Explain mobile agent security and fault tolerance using distributed transactions **(8)**

Unit - III

3. Write short notes on the following
   a) Unicast discovery
   b) Multicast discovery
   c) Advertisement
   d) Garbage collection **(4×4)**

OR

3. What do you mean by service discovery and standardization? And also explain various methods of service discovery **(16)**

Unit - IV

4. What is pervasive computing ? Discuss the concept of decentralization diversification and also explain principles of pervasive computing **(16)**

OR

4. Explain the system architecture of World Wide Web with proper diagrammatic presentation and describe various web services **(16)**

Unit - V

5. Describe Destination Sequenced Distance Vector routing (DSDV) and Ad HOC on demand distance vector routing (AODV) in detail **(16)**

OR

5. Write short note on the following
   a) Portal infrastructure
   b) DECT standard
   c) Global State Routing (GSR) & Dynamic Source Routing (DSR)
   d) Temporary Ordered Routing Algorithm(TORA) **(4×4=16)**

8E8162

Roll No. _____ [Total No. of Pages : 2

8E8162

B.Tech. VIII Semester (Main) Examination, April/May 2016

Computer Science & Engineering

8CS2A Digital Image Processing

Common With 8IT2A

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

Unit - I

1. Explain the concept of image representation and differentiate the image compression and representation **(16)**

OR

1. What is image quantization? Explain the scalar & image quantization in detail **(16)**

Unit - II

2. a)

Gray level	0	2	3	4	5	6	7	8
No of pixels	100	90	85	70	0	0	0	0

Perform histogram stretching so that the new image has a dynamic range of (0,8) **(8)**

b) What do you mean a Fourier transforms? Explain its properties in detail **(8)**

OR

2. Describe the basic principles of image enhancement by

a) spatial domain methods

b) Frequency domain methods **(8×2=16)**

Unit - III

3. Design homomorphic filtering. Explain homomorphic filtering model. How do we get back the modified image? **(16)**

OR

3. a) Explain the general image restoration models **(8)**

   b) Explain the various noise models in details **(8)**

Unit - IV

4. Find the Huffman coding for given seven letters along with probability of occurrence

Letters	Probability
B	0.110
A	0.154
G	0.011
D	0.063
E	0.059
C	0.072
F	0.015

(16)

OR

4. Describe JPEG in detail **(16)**

Unit - V

5. a) Given 5 points, use Hough transform to draw a line joining these points (1,4),(2,3),(3,1),(4,1),(5,0) **(8)**

   b) Explain region based segmentation with suitable example **(8)**

OR

5. Write short notes on (any two):-

   i) Image segmentation

   ii) EDGE linking

   iii) Thresholding

   iv) Boundary linking **(8×2=16)**

8E8163

Roll No. _____ [Total No. of Pages :3

8E8163

B.Tech. VIII Semester (Main) Examination, April/May 2016

Computer Science & Engineering

8CS3A Distributed Systems

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly)*

Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) What is distributed system? Explain its features differentiate between network OS and distributed OS **(8)**

   b) Differentiate between logical clock and global clock. Explain Lamport's logical clock algorithm **(8)**

OR

1. a) Define system model and briefly explain about architecture models **(8)**

   b) What do you mean by distributed computing environment(DCE)? Explain its features services and goals **(8)**

Unit - II

2. a) What is RPC in distributed systems? Explain the client /server architecture. Describe the role of client stub and server stub while making an RPC call **(8)**

b) Describe the design issues and implementation of RMI (8)

OR

2. a) Describe the language mechanism for synchronization (8)

b) Explain the name and directory services (8)

Unit - III

3. a) Describe the file service architecture. Explain case study on sun network file system (8)

b) Differentiate between flat and nested distributed transaction. Explain concurrency control in distributed transaction (8)

OR

3. a) What is static process scheduling? Write the advantages of static process scheduling (8)

b) Define time stamp ordering in transaction and explain with suitable example (8)

Unit - IV

4. a) Explain distributed shared memory system in distributed environment with suitable diagram (8)

b) Explain the failures in a distributed system (8)

OR

4. a) Explain distributed mutual exclusion with its classification (8)

b) Describe memory consistency models & multiprocessor cache systems (8)

Unit - V

5. a) Explain Byzantine agreement problem and suggest a solution to this problem **(8)**

   b) Explain concept of fault, failure and recovery **(8)**

OR

5. Write short note on the following

   a) Agreement protocols

   b) Atomic multicast

   c) Replicated data management

   d) CORBA RMI **(4x4=16)**

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8E8165

Roll No. _____ [Total No. of Pages :3

8E8165

B.Tech. VIII Semester (Main) Examination, April/May 2016
Computer Science & Engineering
8CS4.2A Real Time Systems

Time : 3 Hours **Maximum Marks : 80**
Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly) Units of quantities used/calculated must be stated clearly.*

Unit - I

1. a) Define real time system. What are the characteristics of real time system, explain with an example **(8)**

   b) What is signal processing system Explain with suitable example? What is the use of bandwidth demand in signal processing system **(8)**

OR

1. Briefly explain the following

   a) Block diagram of RTS

   b) Deadline and execution time

   c) Period and release time

   d) Effect of tardiness of job on soft and hard real time jobs **(4+4+4+4)**

Unit - II

2. a) What do you mean by precedence constraints? Explain precedence graph and task graph **(8)**

b) Describe weighted round robin approach to real time scheduling **(8)**

OR

2. a) What are the functional parameters of job? Explain **(6)**
   b) Explain following briefly **(10)**

   i) Data dependency and its types

   ii) Periodic and aperiodic task model

   iii) Clock driven scheduling

   iv) Scheduling criteria

Unit - III

3. a) Explain clock driven scheduling with suitable example **(8)**

   b) Explain following

   i) Rate monotonic(RM) algorithm. **(4)**

   ii) fixed priority v/s dynamic priority scheduling. **(4)**

OR

3. a) Explain non-optimality of EDF and LST algorithms **(8)**

   b) A system have tasks such as. **(8)**

   T_1=(10,2)

   T_2=(15,5)

   T_3=(25,9)

   Show the periodic task T_1, T_2, T_3 are schedulable by the RMA

Unit - IV

4. a) What is aperiodic task scheduling? Explain assumption and approaches for aperiodic task scheduling? **(8)**

   b) Explain slack stealing algorithm **(8)**

OR

4. Write short notes on

a) General structure of cyclic scheduling

b) Flexible applications

c) Simple Sporadic server

d) Firm deadline model (4+4+4+4)

Unit - V

5. a) What is RAC? Discuss the effects of resources contention (8)

b) Give advantages and disadvantages of priority inheritance protocol (8)

OR

5. a) What is priority inversion? Explain how it is related to critical section (8)

b) Explain use of priority ceiling protocol in dynamic priority system (8)

8E 8061

Roll No. _____ [Total No. of Pages : 2

8E 8061

B.Tech. VIII Semester (Main) Examination, April/May 2016
Information Technology
8IT1A Software Testing & Validation

Time : 3 Hours **Maximum Marks : 80**
Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

Unit - I

1. a) Explain verification & validation in detail what are the differences between the two. What are the advantages & disadvantages of verification & validation **(8)**

   b) Differentiate between white box & black box testing in detail **(8)**

OR

1. a) What is testing? Explain the need of software testing **(8)**

   b) Explain structural testing in detail with suitable examples **(8)**

Unit - II

2. a) Explain integration testing in detail. Describe its various approaches **(8)**

   b) Differentiate between scenario testing & system testing **(8)**

OR

2. Write short notes on (**any two**) **(8×2=16)**

   a) Functional testing

   b) Non-functional testing

   c) Acceptance testing

Unit - III

3. a) What is regression testing? What is the need of regression testing **(8)**

   b) Explain enabling testing in detail **(8)**

OR

3. Explain following types of testing (**any two**) **(8x2=16)**

   a) Ad-hoc testing

   b) Agile & extreme testing

   c) Buddy testing

Unit - IV

4. a) Explain the tools for testing of OO softwares **(8)**

   b) What is OOP & how it differs from procedural programming **(8)**

OR

4. Explain usability testing in detail. What are the ways to achieve usability how does one achieve usability. What are the quality factors for usability **(16)**

Unit - V

5. a) What is a test plan? What is its purpose **(8)**

   b) What are the various types of matrics. Explain in detail **(8)**

OR

5. What is test automation. What is the need of automation in software testing? What are the key factors required for a successful test automation? What are the various components of a test automation frame work **(16)**

8E 8062

Roll No. _____ [Total No. of Pages : 3

8E 8062

B.Tech. VIII Semester (Main) Examination, April/May 2016

Information Technology

(8IT3A) Data Compression Technology

Time : 3 Hours

Maximum Marks : 80
Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

Unit - I

1. a) Explain lossless and lossy compression techniques with suitable example **(6)**

   b) Explain the derivation of average information **(10)**

OR

1. a) Explain modeling & coding in data compression? Explain various types of models used in data compression **(10)**

   b) How you test for unique decodability of code? Determine whether the following codes are uniquely decodable : **(6)**

      i) {0,01,11,111}

      ii) {0,01,110,111}

Unit - II

2. a) Given probability model

Letter	Probability
a_1	0.2
a_2	0.3
a_3	0.5

(8)

b) then find the real valued tag for the sequence $a_1 a_1\ a_3\ a_2\ a_3\ a_1$ **(8)**

b) Explain various applications of arithmetic coding in data compression **(8)**

OR

2. a) Explain LZW encoding & decoding algorithms? Given an initial dictionary consisting of the letters : a b r y b then encode the following message using LZW algorithm : a b b a r b a r r a y b b y b b a r r a y a r b b a y **(10)**

b) Explain adaptive dictionary - based compression techniques **(6)**

Unit - III

3. a) Explain probability models in details **(6)**

b) Explain various types of adaptive quantization **(10)**

OR

3. a) Explain vector quantization procedure **(8)**

b) Explain Linde-buzo-gray algorithm used in data compression. **(8)**

Unit - IV

4. a) Explain various types of delta modulation systems **(8)**

b) Explain speech coding using delta modulation **(8)**

OR

4. a) Explain sampling in frequency & time domain in details **(8)**

b) Explain discrete cosine transform & discrete sine transform **(8)**

Unit - V

5. a) Explain about filters and its types **(8)**

   b) Explain the basic subband coding algorithm **(8)**

OR

5. Write short notes on following **(16)**

   a) Wavelets

   b) Scaling functions

8E5002

Roll No. _____ [Total No. of Pages : 3

8E5002

B.Tech. VIII Semester(Old/Back) Examination April/May- 2016
Computer Science & Engg
8CS2 Information System and Securities
Common for CS & IT

Time : 3 Hours

Maximum Marks : 80
Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)*

Unit - I

1. a) The Miller - Rabin test can determine if a number is not prime but cannot determine if a number is prime. How can such an algorithm be used to test for primality? **(6)**

   b) Six professors begin courses on Monday, Tuesday, Wednesday, Thursday, Friday and Saturday, respectively and announce their intentions of lecturing at intervals of 2,3,4,1,6 and 5 days, respectively. The regulations of the university forbid Sunday lectures (so that a sunday lecture must be omitted). When first will all six professors find themselves compelled to omit a lecture? Hint : Use the CRT. **(10)**

OR

1. a) Find all primitive roots of 25. **(4)**

   b) Using Fermat's theorem, find 3^{201} mod 11. **(4)**

   c) Explain the following with example.

      i) Chinere Remainder theorem.
      ii) Fermat's little theorem.
      iii) Testing for primality. **(8)**

Unit - II

2. a) Distinguish between stream and block ciphers. Discuss the idea of algorithm modes with detailed explaination of at least two of them. **(6)**

   b) What primitive operations are used in RC4? Explain the DES Algorithm in detail. **(10)**

OR

2. a) Demonstrate that RC5 decryption is the inverse of RC5 encryption. **(6)**

   b) How does the one time initialization step work in AES? **(4)**

   c) Explain the principles of the IDEA algorithm. **(6)**

Unit - III

3. Consider the following scheme :

   1. Pick an odd number E.
   2. Pick two prime numbers, p and Q, where (P-1) (Q-1) - 1 is evenly divisible by E.
   3. Multiply P and Q to get N.
   4. Calculate $D = \frac{(P-1)(Q-1)(E-1)+1}{E}$

   Is this scheme equivalent to RSA? Show why or why not. **(16)**

OR

3. a) In a public key system using RSA, you intercept the ciphertext C = 10 sent to a user whose public key is e = 5, n = 35. What is the plaintext M? **(6)**

   b) Consider a Diffie - Hell man scheme with a common prime. q = 11 and a primitive root $\alpha = 2$.

      i) Show that 2 is a primitive Root of 11.

      ii) If user A has public key $Y_A = 9$, What is A's private Key Y_A?

      iii) If user B has public key $Y_B = 3$, what is the shared secret key K? **(10)**

Unit - IV

4. a) Comment on the differences between MD4 and MD5. Specifically, to what extent do you think that MD5 is stronger than MD4, and why? **(6)**

   b) Describe the advantages and disadvantages of symmetric and asymmetric key cryptography. **(6)**

   c) Explain the Elgamal digital signature algorithm. **(4)**

OR

4. a) Explain the RSA digital signature algorithm with suitable example. **(8)**

   b) Why is SHA more secure than MD5? **(4)**

   c) What is the difference between MAC and message digest? **(4)**

Unit - V

5. a) Consider a situation : An attacker (A) create a certificate, puts a genuine organizations name (say bank B) and the puts the attacker's own public key. Your get this certificate from the attacker, without knowing that the attacker is sending it you think it is from the bank (B).

   How can this be prevented to resolved? **(8)**

   b) What are the threats associated with user authentication over a network or Internet? Explain the purpose of the X. 509 standard? **(4+4)**

OR

5. Explain the following in details (Any four)

   a) PGP

   b) MIME

   c) IPSec

   d) SSL protocol

   e) Lamport hash

   f) EKE protocol. **(16)**
