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8E 8161

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8E 8161

B.Tech. VIII Semester (Main & Back) Examination, April - 2019
Computer Science and Engineering
8CS1A Mobile Computing
Common with CS,IT

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

Min. Passing Marks : 26

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. Define mobile computing. Explain the mechanisms for adaptation and incorporating adaptations. **(16)**

(OR)

1. a) What is mobility management? Explain PCS location management scheme. **(8)**
   b) Describe application aware adaptation for mobile computing. **(8)**

Unit - II

2. a) What is mobile middleware? Explain its types with examples. **(10)**
   b) Explain data dissemination and bandwidth allocation for publishing? **(6)**

(OR)

2. Explain Broadcast disk scheduling and mobile web caching. **(16)**

Unit - III

3. Explain various methods for service discovery and standardization methods in details. **(16)**

(OR)

3. Write a short note on :
   a) Garbage collection. **(6)**
   b) Eventing. **(5)**
   c) Service catalogs. **(5)**

Unit - IV

4. a) What is mobile IP packet delivery? **(6)**

   b) What is tunneling in mobile input? **(5)**

   c) What are the goals of mobile IP? **(5)**

(OR)

4. Write a short note on data base system in mobile environments and world wide web and mobility. **(16)**

Unit - V

5. a) Explain Ad-HOC networks application. **(8)**

   b) Explain Temporary Odered Routing Algorithm (TORA). **(8)**

(OR)

5. a) Differentiate between DSR and AODV. **(8)**

   b) Explain the following in brief:

      i) MAC issues. **(4)**

      ii) Routing Protocols. **(4)**

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8E 8162

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8E 8162

B.Tech. VIII Semester (Main&Back) Examination, April - 2019
Computer Science & Engg.
8CS2A Digital Image Processing
Commom with CS,IT

Time : 3 Hours **Maximum Marks : 80**
Min. Passing Marks : 26

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 are the basic components of an image processing system? Explain all the components with block diagram. Write down the three example of field that uses digital Image processing. **(12)**

   b) Explain different types of mathematical tools which are used in digital image processing. **(04)**

(OR)

1. a) Explain the importance of brightness adaptation and discrimination in Image processing. **(06)**

   b) What are the applications of Image processing? Explain components of Image processing. **(06)**

   c) Differentiate Image quantization and scalar quantization. **(04)**

Unit - II

2. a) List out the properties of 2D Fourier transform. Explain spatial filtering. **(08)**

   b) Describe histogram equalization. Obtain Histogram equalization for the following image segment of size 5×5. Write the interface on image segment before and after equalization. **(08)**

(OR)

2. a) Describe the basic principles of Image enhancement by
   i) Spatial domain method
   ii) Frequency domain methods. **(2×4=8)**
   b) Explain about convolution and correlation properties of the 2D FFT. **(08)**

Unit - III

3. a) Write short note on **(any two)**
   i) Holomorphic filter
   ii) Inverse filter
   iii) Weiner filter **(2×4=8)**
   b) Explain the expression for observed image when the degradation are linear, position invariant. **(08)**

(OR)

3. a) What is Image restoration model? Explain paint and spatial Image restoration models. **(08)**
   b) Define the process of restoration. Explain any four important noise probability density functions. **(08)**

Unit - IV

4. a) Draw a Image compression model and describe the work of each block. **(08)**
   b) What are the basic steps in JPEG compression? Explain. **(08)**

(OR)

4. a) Write short note on :-
   i) Coding redundancy
   ii) Inter pixel redundancy **(2×4=8)**
   b) Explain Lossy and Lossless coding techniques. **(08)**

Unit - V

5. a) Describe the segmentation process in digital Image processing. Explain the fundamental of edge based segmentation. **(06)**
   b) Explain the region growing method for segmentation in Image processing. **(04)**
   c) Discuss gradient operators. Write 3×3 region two dimensional sobel mask and express their partial derivative equations. **(06)**

(OR)

5. a) Explain the technique of thresholding for segmentation. **(08)**
   b) Describe how hough transform used for boundary shape detection. **(08)**

8E 8062

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8E 8062

B.Tech. VIII Semester (Main&Back) Examination, April.2019
Information Technology
8IT3A Data Compression Techniques

Time : 3 Hours **Maximum Marks : 80**
Min. Passing Marks : 26

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 Huffman coding ? Also write down its Encoding Algorithm? **(8)**
   b) Write down the application of lossless compression. **(8)**

(OR)

1. a) What is Rice code? Explain in detail. **(8)**
   b) Describe the steps for a test for unique decodability Determine whether the following codes are uniquely decodable.
      i) {0, 01, 11, 111}
      ii) {0, 01, 110, 111}
      iii) {0, 10, 110, 111}
      iv) {1, 10, 110, 111} **(8)**

Unit - II

2. a) Where we use the dictionary techniques of encoding? Explain various types of dictionary techniques. **(8)**
   b) Encode & decode the following stream of characters: BACA with probabilities P(A)=0.5, P(B)= P(C)=0.25 using arithmetic coding? **(8)**

(OR)

2. a) Explain facsimile encoding. Also define its types. **(8)**
   b) Write down the difference between LZ77 and LZ78. **(8)**

Unit - III

3. a) What do you mean by codebook of a Quantizer? What problems can be there when designing a codebook for a higher dimensional quantizer? How Linde-Buzo Grey algorithm is helpful here. **(10)**

   b) Give the difference between vector quantization & scalar quantization. **(6)**

(OR)

3. a) Explain lattice algorithm and give the advantage of lattice algorithm. **(8)**

   b) What do you understand by vector quantization? Explain the procedure of vector quantization. **(8)**

Unit - IV

4. a) What is the significance of discrete Cosine transform in JPEG baseline algorithm? **(8)**

   b) What is z-transform? Explain its types & properties. **(8)**

(OR)

4. a) Design the CVSD decoder block diagram. **(8)**

   b) Define the steps required in DPCM compression of images and video signals. **(8)**

Unit - V

5. a) List out the applications used in Walvet based compression. **(8)**

   b) Discuss various MPEG standards. **(8)**

(OR)

5. a) Explain basic sub-band algorithm with suitable example. **(8)**

   b) Explain multi-resolution analysis? How scaling functions are used in multi-resolution analysis? **(8)**

8E 8163

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8E 8163

B.Tech. VIII Semester (Main&Back) Examination, April - 2019
Computer Science And Engineering
8CS3A Distributed Systems

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

Min. Passing Marks : 26

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 various types of operating systems associated with the distributed systems along with design issues in distributed operating systems. **(16)**

(OR)

1. a) Explain Goals and Services of distributed systems. **(8)**
   b) Write and explain various theoretical issues in distributed systems. **(8)**

Unit - II

2. a) Explain Graph models for process representation in detail. **(8)**
   b) What is synchronization and how it is required in concurrent process and programming? Explain. **(8)**

(OR)

2. a) Explain the concept of RPC and RMI's in distributed systems. **(10)**
   b) Write short note on message passing. **(6)**

Unit - III

3. Explain Dynamic Load Sharing and balancing and its requirement in distributed process scheduling with justification. **(16)**

(OR)

3. a) What is transaction service and concurrency control? Explain. **(8)**
   b) Explain Data and file Replication in Distributed File systems. **(8)**

Unit - IV

4. What is Distributed Shared memory? Explain its implementation in distributed systems. **(16)**

(OR)

4. Explain following in distributed computation.
   a) Failures in a Distributed System. **(8)**
   b) Distributed deadlock handling. **(8)**

Unit - V

5. a) Explain the concept of Replicated data management and various issues associated with Replicated data management in detail. **(10)**
   b) Describe concepts of faults, failure and Recovery. **(6)**

(OR)

5. Explain following in detail.
   a) CORBA RMI and services. **(8)**
   b) Byzantine faults and Agreement. **(8)**

8E 8165

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8E 8165

B.Tech. VIII Semester (Main & Back) Examination, April - 2019
Computer Science & Engg.
8CS4.2A Real Time Systems

Time : 3 Hours **Maximum Marks : 80**
Min. Passing Marks : 26

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. Differentiate between soft and hard RTS **(8)**
   b) Explain concept of task. Also explain task parameters **(8)**

(OR)

1. Briefly describe **(4×4=16)**
   i) Block diagram of RTS
   ii) Timing characteristics
   iii) Tracking
   iv) Gating

Unit - II

2. a) Differentiate between fixed, Jittered and sporadic release time. **(8)**
   b) Explain priority driven approach in RTS **(8)**

(OR)

2. a) Explain concept of Precedence Graph and task Graph. **(8)**
   b) Differentiate between on-line versus and off-line scheduling. **(8)**

Unit - III

3. a) With reference to cyclic scheduler, explain
      i) Frames and Major cycles.
      ii) Frame size constraint.
      iii) Job slices. **(12)**
   b) Explain Rate-Monotonic (RM) Algorithm **(4)**

(OR)

3. a) Explain Optimality of RM and DM algorithms **(8)**

b) Show that the periodic task **(8)**

$T_1 = \{10, 2\}$

$T_2 = \{15, 5\}$

$T_3 = \{25, 9\}$

are schedulable by the rate monotonic algorithm.

Unit - IV

4. a) Explain Deferrable servers and its operations. **(8)**

b) Explain Slack Stealing algorithm. **(8)**

(OR)

4. a) Explain any two server based priority Scheduling algorithm **(8)**

b) Explain schedulability of :- **(4+4=8)**

i) Fixed-Priority Task

ii) Deadline-Driven Task

Unit - V

5. a) Explain effect resource contention **(3×3=9)**

i) Priority inversion

ii) Timing anomalies

iii) Deadlock

b) Explain rules of Basic Priority-Ceiling Protocol **(3)**

c) Explain briefly Convex-Ceiling Protocol **(4)**

(OR)

5. Write short note on (any **Four**) **(4×4=16)**

i) Non-Preemptive Critical Section

ii) Resource Conflicts and Blocking

iii) Preemption-Ceiling Protocol

iv) Extended priority exchange

v) RTS requirements

vi) Clock Driven Scheduling

8E5002

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8E5002

B.Tech. VIII - Semester (Back) Examination, April-2019
Information Technology
8IT2(O) Information System Security
Common with CS, IT

Time : 3 Hours **Maximum Marks : 80**
Min. Passing Marks : 26

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 the key equivocation and unicity distance in detail. **(6)**

   b) Explain the following with example: **(2×5=10)**

      i) Chinese remainder theorem.

      ii) Fermat's little theorem.

(OR)

1. a) Write short note on: **(2×4=8)**

      i) Groups & its order.

      ii) Euler's totient function.

   b) Explain in detail: **(2×4=8)**

      i) Legendre and Jacobi symbols.

      ii) Prime number theorem.

UNIT-II

2. a) i) Compare the concepts of diffusion and confusion. **(2×4=8)**

      ii) Describe in detail the propagation and non-linearity.

   b) Discuss the key-shifting process of international data encryption algorithm. Also generate the sub-key for each round and output transformation in IDEA. **(8)**

(OR)

2. a) What do you mean by classical cipher techniques explain in detail. **(10)**

   b) Explain Lucifer algorithm in detail. **(6)**

UNIT-III

3. a) What is cryptography? Explain the difference in between symmetric and asymmetric key cryptography. **(2+8=10)**

   b) In 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)**

(OR)

3. a) Write short note on: **(2×4=8)**

      i) RSA exponentiation in modular arithmetic.

      ii) Diffie- Hellman key exchange.

   b) Explain following in detail: **(2×4=8)**

      i) Discrete logarithms.

      ii) Security analysis of RSA.

UNIT-IV

4. Why we need message authentication justify your answer? Explain the concept of MAC and its functions and what is Hash function? Explain? **(16)**

(OR)

4. a) What is digital signature? How authentication is accomplish using DSS (Digital Signature &Standard). **(4+8=12)**

   b) Explain the authentication schemes for mutual authentication based on shared secret. **(4)**

UNIT-V

5. Why SSL is important? Explain the working of SSL using required diagram. What are the difference between SSL, SET & TSL? **(4+4+8=16)**

(OR)

5. Short note on: **(8+8=16)**

   a) S/MIME.

   b) AH & ESP in transport mode.

8E 8061

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8E 8061

B.Tech. VIII Semester (Main&Back) Examination, April.2019
Information Technology
8IT1A Software Testing & Validation

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

Min. Passing Marks : 26

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 are the characteristics of good requirements? Describe V and V activities during design phase of software development. **(4+4=8)**

   b) What is Cyclomatic Complexity? Write down the code of Binary search routine and draw flow graph for above code and write down the test code after computing the cyclomatic complexity. **(8)**

(OR)

1. a) "Software testing is an incremental process". Justify the statement. What are the limitations of testing? **(4+4=8)**

   b) Differentiate between structural and functional testing. Discuss the limitations of structural testing. **(4+4=8)**

Unit - II

2. a) How functional testing is different from non-functional testing? Explain. **(8)**

   b) What is integration testing? What is the need of this testing and why it is necessary to perform integration testing? **(3+2+3=8)**

(OR)

2. a) Why acceptance testing is done? What are the characteristics of acceptance testing? **(3+5=8)**

   b) What is performance testing? Explain the methodology for performance testing. **(8)**

Unit - III

3. What is regression testing? How is it different from development testing? List the steps involved in doing regression testing? **(16)**

(OR)

3. a) What are the advantages and disadvantages of adhoc testing? **(8)**

   b) Describe the challenges faced by testers during internationalization testing. **(8)**

Unit - IV

4. a) What is object oriented testing? Explain the testing methods applicable at class limit. **(8)**

   b) What is usability testing ? Explain approaches of usability testing. **(8)**

(OR)

4. a) What are various quality factors for usability and explain various tools for usability testing. **(8)**

   b) Describe accessibility testing in detail. Discuss basic and product accessibility. **(8)**

Unit - V

5. a) What is the need of automation in software testing? Describe the architecture of software test automation. **(10)**

   b) Why standards are used? What are their benefits? What are their limitations? **(2+2+2=6)**

(OR)

5. a) Differentiate between process metrics and product metrics. **(8)**

   b) Explain test planning and management. **(8)**
