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B.Tech. VIII Sem. (Main/Back) Examination, June - 2022
Computer Sc. & Engg.
8CS4-01 Big Data Analytics

Time : 3 Hours

Maximum Marks : 120
Min. Passing Marks : 42

Instructions to Candidates:

*Attempt all ten questions from **Part A**, five questions out of **Seven** from **Part B** and **Four** questions out of **Five** from **Part C**.*

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.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

PART - A

(Answer should be given up to 25 words only)

All questions are **compulsory.**   (10×2=20)

1. What are the three V's of Big data?

2. What is Hadoop API.

3. Why Hadoop is used in Big data analytics?

4. Differentiate between combiner and partitioner.

5. Differentiate between object writable and generic writable?

6. What is google file system.

7. What is Driver code.

8. Explain Pig Script Interfaces.

9. List some issues and challenges in data stream query processing.

10. What is Hive data manipulation language?

PART - B

(Analytical/Problem solving questions)

Attempt any **Five** questions. (5×8=40)

1. What is HDFS? List all the components of HDFS and explain any four components.

2. What is the role of a "combiner" in the map reduce framework? Explain with the help of one example.

3. How can implementing a Raw comparator for speed?

4. How can creating and managing databases and tables? Explain it.

5. Explain the principles to be considered while writing pig scripts.

6. Explain the application flow of pig latin.

7. Explain the creating, dropping and altering databases using APACHE Hive.

PART - C

(Descriptive/Analytical/Problem Solving/Design questions)

Attempt any **Four** questions. (4×15=60)

1. Explain HDFS architecture with diagram.

2. Explain the building blocks of Hadoop. Draw the block diagram and explain all the blocks separately. Also draw the flow diagram of building blocks of Hadoop.

3. Write the Java code for MAP and REDUCE of word count problem. Describe the steps of compiling and removing the map reduce program.

4. Explain the working through the ABC's of Pig data. How can check out the pig script interfaces.

5. What are Wrapper classes? List and explain wrapper classes available for primitive types?

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B.Tech. VIII Sem. (Main/Back) Examination, June - 2022
Information Technology
8IT4-01-Internet of Things

Time : 3 Hours

Maximum Marks : 120
Min. Passing Marks : 42

Instructions to Candidates:

*Attempt all **Ten** questions from **Part A**, **Five** questions out of **Seven from Part B** and four questions out of five from Part C.*

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.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory. (10×2=20)

1. What is the role of things and internet in IoT.

2. Which of the communication protocols are used by IoT.

3. Differentiate between sensors and actuators.

4. Define cloud computing as per National Institute of Standards and Technology.

5. Define Wireless Sensor Networks.

6. State communication protocols.

7. Differentiate between IoT and M2M.

8. Differentiate between SDN and NFV for IoT.

9. Illustrate the building blocks of IoT device.

10. Differentiate Raspberry with Arduino.

PART - B

(Analytical/Problem solving questions)

Attempt any five questions (5×8=40)

1. How do IoT devices communicate? Explain with suitable diagrams.

2. What are the different types of Sensors used in IoT Network.

3. Discuss the role of Data Analytics in Internet of Things (IoT).

4. What are the main challenges of an Internet of Things (IoT).

5. Describe different Cloud Service Models.

6. What are the major Privacy and Security Issues in case of Internet of Things (IoT).

7. Explain Smart City Security Architecture.

PART - C

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any FOUR questions (4×15=60)

1. Explain Representational State Transfer (REST) Architecture of IoT.

2. What are the IoT levels and deployment Templates.

3. Explain challenges in IoT.

4. Express how to organization and analytics in IoT/M2M.

5. Explain The Applications of IoT.

B.Tech. VIII Sem. (Main/Back) Examination, June - 2022
Open Elective - II
8CS6-60.2 IPR, Copyright and Cyber Law of India

Time : 3 Hours

Maximum Marks : 120
Min. Passing Marks : 42

Instructions to Candidates:

Attempt all Ten questions from Part A, Five questions out of Seven questions from Part B and Four questions out of Five questions from Part C.

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.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

PART - A
(Answer should be given up to 25 words only)

All questions are **compulsory**   (10×2=20)

1. What are the various types of Intellectual Property rights?
2. Explain Originality in Copyright Works.
3. What is Cyber Fraud?
4. Differentiate between cyber crime and conventional crime.
5. List out the term or Protection of various ip rights.
6. Explain the function of a trademark.
7. Explain 'cyberspace' and impact of law.
8. What are the rights of a patent holder?
9. What is the purpose of compulsory license under the patent law?
10. Distinguish Hackers and Crackers.

PART - B
(Analytical/Problem solving questions)

Attempt any **Five** questions   (5×8=40)

1. Explain the procedure for obtaining a patent for an invention.
2. Explain briefly about four important intellectual property rights.
3. What is the procedure for registration of a trademark?
4. What are various cyber-crimes and explain about them.
5. What is the impact of internet on copyright?

6. Write an essay on moral right of an author under the copyright Act.
7. What is Biometrics? Explain its importance an effective device for curbing the virus attacks in the networking security system.

PART - C
(Descriptive/Analytical/Problem Solving/Design Questions)
Attempt any **Four** questions   (4×15=60)

1. What is called 'Domain Name' and explain with the help of case laws the regulation of Domain Names in the Indian legal system?
2. What is Intellectual Property Rights (IPR)? What are the different types of IPR, explain who is benefitted from each type of IPR and how?
3. What is Trademark? Explain the different types of Trademarks with examples. Differentiate between Trademarks and design. What is the process of registering a trademark?
4. Discuss whether various International Treaties and Conventions have been instrumental in defining the path of intellectual property rights in the cyber world.
5. Comment on the patent Act 1970 and its amendment. Explain in brief the patent filing procedure. What are the differences between product patents and process patents?

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B.Tech. VIII Sem. (Back) Examination, June - 2022
Computer Sc. and Engg.
8CS1A Mobile Computing

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.*

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

UNIT - I

1. a) Explain characteristics of mobile computing Environment. **(6)**

    b) Explain search and update operation in a location management system with flat organization. **(10)**

(OR)

1. a) Discuss location management aspects of mobility management. **(6)**

    b) Explain search and update operation in a hierarchical (Tree) location management system. **(10)**

UNIT - II

2. Write and explain any algorithm for determining optimal Bandwidth allocation between on - demand and Broadcast channel. **(16)**

(OR)

2. Discuss Asynchronous Stateful (AS) Scheme for cache consistency maintenance. **(16)**

UNIT - III

3. Discuss functions of mobile agents along with its advantages and disadvantages. **(16)**

(OR)

3. Explain standardization process of service discovery frameworks for new service types. **(16)**

UNIT - IV

4. a) What is mobile ip in wireless communication. (8)

    b) What is snooping in mobile computing. (8)

(OR)

4. a) What are the advantages of mobile TCP. (8)

    b) Briefly describe database systems in mobile environments. (8)

UNIT - V

5. Explain following tasks of wireless sensor network. (4×4=16)
    i.   Neighbor discovery.
    ii.   Sensing.
    iii. Topology control for energy saving.
    iv.   Routing.

(OR)

5. a) Discuss properties of mobile Ad HOC Network. (8)

    b) Propose Applications of wireless sensor networks. (8)

B.Tech. VIII Sem. (Back) Examination, June- 2022
Computer Sc. & Engg.
8CS2A Digital Image Processing

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.*

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

Unit - I

1. a) Write down the name of components of Image processing, explain it in detail also explain application of digital Image processing. **(10)**

   b) Relate the Image quantization and scalar quantization. **(6)**

(OR)

1. a) Classify the different types of mathematical tools which are used in DIP. **(4)**

   b) What is the role of "Brightness adaptation" and "discrimination" in DIP. **(6)**

   c) What is color vision model, explain it in detail. **(6)**

Unit - II

2. a) For 2D Fourier Transformation explain convolution and correlation properties with example. **(8)**

   b) Describe histogram equalization. Obtain histogram equalization for the image segment 5×5. Write the interface on image segment before and after equalization. **(8)**

(OR)

2. What is frequency domain filters, explain each type in detail. **(16)**

Unit - III

3. a) Define the Image restoration model? Explain paint and spatial Image restoration models. **(8)**

   b) What is noise and inverse filtering, explain in detail. **(8)**

(OR)

3. a) Implement the process of restoration. **(4)**

   b) Write short note on weiner filter. **(4)**

   c) Write short note on inverse filter. **(4)**

   d) Write short note on Holomorphic filter. **(4)**

Unit - IV

4. a) Design the image compression model and also explain working of each block. **(8)**

   b) What is lossy and lossless coding techniques. **(8)**

(OR)

4. a) List out the basic steps of JPEG image compression, explain each step by step in detail. **(8)**

   b) What do you understand by Huffman coding, explain with suitable example. **(8)**

Unit - V

5. Explain any two in detail. **(8×2=16)**

   a) Thresholding.

   b) Hough Transforms.

   c) Edge detection.

(OR)

5. Explain any two in detail. (8×2=16)

   a) Segmentation process in DIP.

   b) Edge and Boundary linking.

   c) Boundary descriptors.

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8E8163

B.Tech. VIII Sem. (Back) Examination, June - 2022
Computer Sc. and Engg.
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.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205).

UNIT - I

1. a) What is distributed System? Explain its features differentiate between network OS & Distributed OS. **(8)**

   b) What are the goals behind developing distributed System ? Explain. **(8)**

   (OR)

1. a) Explain the design issues of distributed operating systems. **(8)**

   b) Explain distributed Computing paradigm. **(8)**

UNIT - II

2. a) Explain client /Server model with example /diagram. **(8)**

   b) Describe all the approaches of Shared variable synchronization. **(8)**

   (OR)

2. How are certified & anonymous servers handled differently in the handshake protocal for the SSL (Secure Socket Layer). **(16)**

UNIT - III

3. a) Explain the sender-initiated algorithm of dynamic load sharing & balancing. **(8)**

   b) Girl All the techniques of Real time Scheduling. **(8)**

(OR)

3. a) Give the brief description of DFS Design & implementation. **(8)**

   b) What are the characteristics of Distribution file System. **(8)**

UNIT - IV

4. a) What is Non-Uniform memory access? Explain Non-Uniform memory Access Architectures. **(8)**

   b) Explain multiprocessor cache Systems in detail. **(8)**

(OR)

4. a) What is distributed Snapshot? Explain with algorithm. **(8)**

   b) Difference between controlized & Distributed deadlock detection. **(8)**

UNIT - V

5. a) Describe Byzantine Agreement with algorithm. **(8)**

   b) Explain the failure model in distributed systems. **(8)**

(OR)

5. a) Explain two-phase commit with algorithm & also describe replicated data management. (8)

    b) Explain CORBA? And - also describe its features. (8)

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B.Tech. VIII Sem. (Back) Examination, June - 2022
Computer Sc. & Engg.
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.*

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

UNIT - I

1. a) Can you describe a computer system that is completely a Real Time? How a real time system is different from other computer based systems. **(8)**

   b) Explain the working of Radar signal processing system using a suitable diagram. **(8)**

(OR)

1. a) Which is the traditional performance measures used for Real time systems? How hard deadlines are performance measures for the real time systems. **(8)**

   b) What are timing constraints? Explain different types of timing constraints in detail. **(8)**

UNIT - II

2. a) Explain off - line and on - line scheduling and list out main differences between off - line and on - line scheduling with examples. **(8)**

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

(OR)

2. a) Explain Real time system's Architecture and A system contain four tasks and their periods and execution times of four periodic tasks are : -
   $T_1 (4,1)$, $T_2 (5,1.8)$, $T_3 (20,1)$ and $T_4 (20,2)$ calculate individual utilization of tasks, total utilization. **(10)**

   b) Describe weighted roud robin approach to real time scheduling. **(6)**

3. a) A system have tasks such as : **(8)**

$T_1 = (10,2)$

$T_2 = (16,6)$

$T_3 = (22,11)$

Show the periodic task T_1, T_2, T_3 are schedule by the RMA.

b) What are the different method to improve the average response time of aperiodic Jobs? Explain. **(8)**

(OR)

3. a) What are the frames and major cycles in cyclic schedules? What are the different frame size constraints? **(4+6)**

b) What do you mean by fixed priority algorithm? Explain. **(6)**

UNIT - IV

4. What are flexible applications? What are the various approaches for scheduling of flexible computations? Explain DCM algorithm using a suitable example. **(16)**

(OR)

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

b) Explain polling server and deferrable server. **(8)**

UNIT - V

5. a) What is critical section? Explain mutual exclusion. **(8)**

b) What do you mean by resource conflicts and blocking? Explain. **(8)**

(OR)

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

b) Explain basic priority ceiling protocol and priority inheritance protocol in detail. **(8)**

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