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Name...

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

FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION MARCH 2021

(CBCSS)

Computer Science

CSS 4E 03 A—DATA COMPRESSION

(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend* **all** *questions in each section.*

2. *The minimum number of questions to be attended from the Section/Part shall remain the same.*

3. *There will be an overall ceiling for each Section/Part that is equivalent to the maximum weightage of the Section/Part.*

Section A

Answer any **four** *questions.*
Each question carries 2 weightage.

1. List out the roles of DBA.

2. Define spatial redundancy.

3. What are the features of audio compression ?

4. Compare the advantages of a database over file systems.

5. Compare lossless compression and lossy compression.

6. What is MPEG ?

7. What are the features of a half toned image ?

(4 × 2 = 8 weightage)

Section B

Answer any **four** *questions.*
Each question carries 3 weightage

8. What is the significance of wavelet based methods in compression ?

9. Compare weak entity sets and strong entity sets.

10. Compare LZ77 and LZW.

Turn over

11. How can we apply Haar transform for compression ?

12. Compare bilinear and bicubic interpolation techniques.

13. What is hidden surface removal ?

14. Mathematically represent Fourier Transform and Inverse Fourier transform of a signal with an equation.

(4 × 3 = 12 weightage)

Section C

*Answer any **two** questions.*
Each question carries 5 weightage

15. Draw an ER diagram for employee management system.

16. Explain Fractal based Compression.

17. Illustrate the steps for JPEG compression.

18. Describe the different approaches of image compression.

(2 × 5 = 10 weightage)

FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION MARCH 2021

(CBCSS)

Computer Science

CSS 4E 03 C—SYSTEM SECURITY

(2019 Admissions)

Time : Three Hours   Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend* **all** *questions in each section.*

2. *The minimum number of questions to be attended from the Section/Part shall remain the same.*

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Section A

Answer any **four** *questions.*
Each question carries 2 weightage.

1. What do you mean by information security ?

2. What is Salami attack ?

3. Write a note on memory address protection in OS.

4. Write short on biometric based authentication.

5. How the terms confidentiality and availability are related ?

6. Who all will be the team member of an effective security administration wing ?

7. What do you mean by non-malicious program errors ?

(4 × 2 = 8 weightage)

Section B

Answer any **four** *questions.*
Each question carries 3 weightage.

8. Explain how the terms security, confidentiality and integrity are related.

9. Write the importance of program security in systems security.

10. What are the file access protection mechanism available in Operating Systems ?

Turn over

11. What are the things to be taken care while designing an authentication module ?

12. Write a short note on database security.

13. What are the characteristics of a good security policy ?

14. What do you mean by multi-level security ? Explain with an example.

(4 × 3 = 12 weightage)

Section C

Answer any **two** *questions.*
Each question carries 5 weightage.

15. List and explain the different types of system security challenges.

16. Explain the threats of virus and other malicious codes. Explain the working and controlling mechanism of viruses.

17. What do you mean by trusted operating systems? Explain the peculiarities of it.

18. Explain the importance of organizational security policy and how it can be effectively implemented.

(2 × 5 = 10 weightage)

FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION MARCH 2021

(CBCSS)

Computer Science

CSS 4E 03 E—FUNDAMENTALS OF BIG DATA

(2019 Admissions)

Time : Three Hours   Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend* **all** *questions in each section.*

2. *The minimum number of questions to be attended from the Section/Part shall remain the same.*

3. *There will be an overall ceiling for each Section/Part that is equivalent to the maximum weightage of the Section/Part.*

Section A

Answer any **four** *questions.*
Each question carries 2 weightage.

1. Define Big Data.

2. What are the characteristics of big data analysis framework ?

3. Differentiate between relational databases and NoSQL databases.

4. Define HDFS.

5. Explain Pig and Pig Latin Model.

6. Explain collection in MongoDB.

7. Discuss &slice() and &size().

(4 × 2 = 8 weightage)

Section B

Answer any **four** *questions.*
Each question carries 3 weightage.

8. List and explain the types of Data.

9. How analytical approaches work in big data.

Turn over

10. Discuss text analytics tools for Big Data.

11. What is MongoDB and explain the types of data modeling concepts used in MongoDB.

12. Explain the key features of MapReduce.

13. Discuss Hadoop Specific Data types.

14. Explain wrapper class.

(4 × 3 = 12 weightage)

Section C

Answer any **two** *questions.*
Each question carries 5 weightage.

15. List and explain the types of NoSQL storage databases.

16. Draw a neat diagram of the Hadoop ecosystem and list the seven important tools in it.

17. Explain the working of MapReduce with example.

18. Discuss HBase and Hive.

(2 × 5 = 10 weightage)

FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION MARCH 2021

(CBCSS)

Computer Science

CSS 4E 03 F—WEB ENGINEERING

(2019 Admissions)

Time : Three Hours   Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend **all** questions in each section.*

2. *The minimum number of questions to be attended from the Section/Part shall remain the same.*

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Section A

*Answer any **four** questions.*
Each question carries 2 weightage.

1. Define Web Engineering.

2. What is Quality Requirement ?

3. Define Software architecture and list the properties of a typical architecture.

4. Explain the requirements of software application modeling.

5. Illustrate the properties of a software application.

6. Explain Beta testing.

7. Describe Link testing.

(4 × 2 = 8 weightage)

Section B

*Answer any **four** questions.*
Each question carries 3 weightage.

8. Describe the categories of web applications.

9. Explain the principles for RE of Web Applications.

10. Illustrate the categories of software requirements.

Turn over

11. Explain Layering and Data aspects.

12. Write a short note on 2-Layer Architectures.

13. Explain the benefits of Automated Tests.

14. Describe conventional approaches in testing.

(4 × 3 = 12 weightage)

Section C

*Answer any **two** questions.*
Each question carries 5 weightage.

15. List and explain the characteristics of web applications.

16. Draw a neat diagram of web application architectures and explain the basic components.

17. Explain Hypertext Structure Modeling with example.

18. Describe web application testing techniques.

(2 × 5 = 10 weightage)

FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION MARCH 2021

(CBCSS)

Computer Science

CSS 4E 04 A—DIGITAL IMAGE PROCESSING

(2019 Admissions)

Time : Three Hours   Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend **all** questions in each section.*

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Part A

*Answer any **four** questions.*
Each question carries 2 weightage.

1. Briefly explain about elements of visual perception.

2. What do you meant by histogram equalization ?

3. Define fast Walsh transform.

4. Specify the properties of 2D Fourier transform.

5. Name the different types of derivative filters.

6. Give the difference between Enhancement and Restoration.

7. What is the need for Compression ?

$(4 \times 2 = 8$ weightage$)$

Part B

*Answer any **four** questions.*
Each question carries 3 weightage.

8. Describe sampling and quantization.

9. How does Histogram equalization achieve filtering ?

10. Compare and contrast low pass and high pass filters.

Turn over

11. Discuss about thresholding.

12. Differentiate between splitting and merging used in image segmentation.

13. Explain arithmetic coding and run length coding.

14. What are the image compression standards ? Explain.

(4 × 3 = 12 weightage)

Part C

Answer any two questions.

Each question carries 5 weightage.

15. With neat sketch, explain the components of image processing system.

16. Write about homomorphic filtering in spatial and frequency domain.

17. What are the different steps of Canny Edge detection algorithm? Briefly describe the way gradient is computed.

18. Explain the concept of Huffman coding with a suitable example. Also explain how does it achieve compression ?

(2 × 5 = 10 weightage)

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FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION MARCH 2021

(CBCSS)

Computer Science

CSS 4E 04 B—ADVANCED TOPICS IN DATABASE DESIGN

(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend **all** questions in each section.*

2. *The minimum number of questions to be attended from the Section/Part shall remain the same.*

3. *There will be an overall ceiling for each Section/Part that is equivalent to the maximum weightage of the Section/Part.*

Section A

*Answer any **four** questions.*
Each question carries 2 weightage.

1. Define E-R model with an example.

2. Write down the characteristics of specialization.

3. Differentiate DBMS with OODBMS.

4. Discuss about SQL3.

5. What are the recovery mechanisms used in distributed databases.

6. Using an example show the structure of XML data.

7. Write a note on spatial database concept.

(4 × 2 = 8 weightage)

Section B

*Answer any **four** questions.*
Each question carries 3 weightage.

8. Explain the different types of data used in database design.

9. Using an example show the working of super class and sub class in E-R model.

Turn over

10. Define OODBMS. Write down its properties.

11. With the help of neat diagrams compare object relational and extended relational databases.

12. Explain the architecture of parallel databases.

13. Discuss any *one* semi structured model with example.

14. Write a note on GIS.

(4 × 3 = 12 weightage)

Section C

Answer any **two** *questions.*
Each question carries 5 weightage.

15. Draw the E-R diagram for the banking database.

16. Explain the concurrency control mechanisms used in OODBMS.

17. Discuss the implementation issues for extended relational databases.

18. Using suitable example explain data fragmentation technique used in distributed database system.

(2 × 5 = 10 weightage)

FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION MARCH 2021

(CBCSS)

Computer Science

CSS 4E 04 C—SOFTWARE DEVELOPMENT FOR PORTABLE DEVICES

(2019 Admissions)

Time : Three Hours   Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend* **all** *questions in each section.*

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Section A

Answer any **four** *questions.*
Each question carries 2 weightage.

1. Compare SMS and MMS.

2. What are the features of Android Debug Bridge tool ?

3. What are the purpose of XML layouts ?

4. Mention the functions of intent filter.

5. What is the function of Android Manifest.xml ?

6. What is APK format ?

7. Write the importance of CSS3 in mobile application development.

(4 × 2 = 8 weightage)

Section B

Answer any **four** *questions.*
Each question carries 3 weightage.

8. Compare semantic elements and structural elements.

9. What are call back functions ?

Turn over

10. How can you add JQuery to webpages ?

11. How event handling is performed in Android application development ?

12. What is the importance of emulator in the android environment ?

13. Discuss the life cycle of an activity ?

14. What comprises of an android application project ?

(4 × 3 = 12 weightage)

Section C

Answer any **two** *questions.*
Each question carries 5 *weightage.*

15. Design a registration form as an android application.

16. Discuss the android architecture and its components.

17. Explain location based services and map based activities in android development.

18. Elaborate on android database design and SQLite databases.

(2 × 5 = 10 weightage)

FOURTH SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION MARCH 2021

(CBCSS)

Computer Science

CSS 4E 04 D—STORAGE AREA NETWORKS

(2019 Admissions)

Time : Three Hours   Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend* **all** *questions in each section.*

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Section A

Answer any **four** *questions.*
Each question carries 2 weightage.

1. Define topology of a network.

2. List the advantages of Fibre Channel Protocol.

3. What are the features of storage devices ?

4. Mention the challenges involved in storage networks.

5. Mention the layers of OSI reference models.

6. List the different SAN topologies.

7. What is a fault tolerant system ?

(4 × 2 = 8 weightage)

Section B

Answer any **four** *questions.*
Each question carries 3 weightage.

8. What is the need for storage networks ?

9. List out the types of SAN and its features.

Turn over

10. Compare SNMP and HTTP.

11. How back up and restoration is performed in iSCSI technology ?

12. List out the storage network management issues.

13. Compare in band and out of band network.

14. Compare the functions of network devices.

(4 × 3 = 12 weightage)

Section C

Answer any **two** *questions.*
Each question carries 5 weightage.

15. Explain the design considerations for building a SAN ?

16. Discuss the components of a SAN ?

17. Elaborate on the components of a SAN.

18. Describe the architecture of storage area network.

(2 × 5 = 10 weightage)

FOURTH SEMESTER M.Sc.DEGREE (REGULAR) EXAMINATION MARCH 2021

(CBCSS)

Computer Science

CSS 4E 04 F—ADVANCED JAVA PROGRAMMING

(2019 Admissions)

Time : Three Hours   Maximum : 30 Weightage

General Instructions

1. *In cases where choices are provided, students can attend* **all** *questions in each section.*

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Section A

Answer any **four** *questions.*
Each question carries 2 weightage.

1. What do you mean by seilizable classes in RMI ?

2. What are Servlets ?

3. What is a Session Bean in EJB ?

4. What are JSP declarations ?

5. What are the components of Hibernate configuration object ?

6. What is Hibernate Caching ?

7. What is the purpose of Skelitons in RMI ?

(4 × 2 = 8 weightage)

Section B

Answer any **four** *questions.*
Each question carries 3 weightage.

8. What you mean by Remote objects ? Give a brief note on it.

9. What is the purpose of HTTP Servlet Request class ?

Turn over

10. How can one EJB be called from within another EJB ? Explain with a simple example.

11. Is threading is possible in EJB ? Explain the reason.

12. What are the types of Directive Tags ? Explain with example.

13. What are the differences between get and load methods ?

14. Explain how the content of a form can be accessed in Servlet.

(4 × 3 =12 weightage)

Section C

Answer any **two** *questions.*
Each question carries 5 weightage.

15. Explain the working RMI in java by listing the steps in order.

16. Explain Servlet Life Cycle. With suitable and simple example.

17. What do you mean by JNDI ? Explain the necessity of JNDI in Advanced Java Applications.

18. Explain how the JSP and Servlet are differ.

(2 × 5 = 10 weightage)

C 2678

FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021

(CCSS)

M.Sc. Computer Science

CS 4C 18—SOFTWARE ENGINEERING

(2014 Admissions)

Time : Three Hours

Maximum : 80 Marks

Answer any **five** *questions.*
Each question carries 16 *marks.*

1. (a) Outline the key characteristics of Agile model. (8 marks)

   (b) Analyse the phases of RAD model. (8 marks)

2. (a) Illustrate the structure of an SRS document with the help of a suitable example. (8 marks)

   (b) Demonstrate the steps in developing a use case with the help of a suitable example.

   (8 marks)

3. (a) Explain context models and behaviour models. (8 marks)

   (b) Explain software prototyping. (8 marks)

4. (a) Explain formal specification with an example. (8 marks)

   (b) Write a note on software reengineering. (8 marks)

5. (a) Discuss the merits of object oriented design. (6 marks)

   (b) Demonstrate the advantages of "design with reuse" and "component based development".

   (10 marks)

6. Demonstrate equivalence partitioning and boundary value analysis with suitable examples.

7. (a) Explain "software risk" and its identification with the help of examples. (7 marks)

   (b) Explain Risk projection, assessment and mitigation. (9 marks)

8. (a) Explain the need and the process of project planning. (8 marks)

   (b) Identify the role of Capability Maturity Model in software engineering. (8 marks)

[5 × 16 = 80 marks]

FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021

(CCSS)

M.Sc. Computer Science

CS 4E 18—MOBILE COMMUNICATION

(2014 Admissions)

Time : Three Hours

Maximum : 80 Marks

Answer any **five** *questions.*
Each question carries 16 *marks.*

1. a) Explain spreads spectrum and its significance.   (6 marks)

    b) Explain slotted aloha.   (10 marks)

2. a) Discuss the SDMA and its significance in mobile communication.   (8 marks)

    b) Explain MAC concept and compare FDMA and TDMA.   (8 marks)

3. a) Give an overview of audio and video broad casting.   (8 marks)

    b) Highlight the features of GSM technology.   (8 marks)

4. a) List the features of infrared transmission. Compare infrared and radio transmission.

                                                                                 (8 marks)

    b) Write short notes on hyperlan and Bluetooth,   (8 marks)

5. a) Explain routing and handover in satellite systems.   (8 marks)

    b) Discuss the key aspects of IP packet delivery.   (8 marks)

6. Discuss Mobile ad-hoc networks.

7. Discuss WAP and WTA architectures.

8. Write notes on :

    i)   Wireless datagram protocol.

    ii) wireless transaction protocol.

                                                                    [5 × 16 = 80 mark

C 2680

FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021

(CCSS)

M.Sc. Computer Science

CSC 4C 16—SOFTWARE ENGINEERING

(2019 Admissions)

Time : Three Hours   Maximum : 80 Marks

Answer any **five** *full questions.*

1. A) What are formal method models ? Explain.   (6 marks)

   B) Discuss key XP process.   (6 marks)

   C) What are the five frame work activities for a generic process for software engineering ?

      (4 marks)

2. A) Describe the generic elements of requirement models in detail.   (8 marks)

   B) What are the Jacobson questioners for use case modelling ? Explain.   (8 marks)

3. A) What is the importance of functional independence ? How is it ensured ?   (8 marks)

   B) Describe the set of properties of an architectural design.   (8 marks)

4. A) Explain the risk monitoring and mitigation.   (8 marks)

   B) Explain any two software cost estimation techniques.   (8 marks)

5. A) Differentiate between Black box testing and white box testing using examples.   (8 marks)

   B) Explain alpha testing and beta testing with an example.   (8 marks)

6. A) What is aspect-oriented software development ? Explain.   (6 marks)

   B) Explain function point-based software estimation.   (6 marks)

   C) What is the purpose of stress testing for a software.   (4 marks)

7. A) Explain the Waterfall model of software engineering.   (8 marks)

   B) Explain ISO 9126 quality factors.   (8 marks)

8. A) Explain the difference between functional requirement and non-functional requirements.

      (8 marks)

   B) Explain object-oriented software design.   (8 marks)

C 2684

FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2021

(CCSS)

M.Sc. Computer Science

CSC 4E 22—MOBILE COMMUNICATION

(2019 Admissions)

Time : Three Hours   Maximum : 80 Marks

Answer any **five** *full questions.*

1. (A) Explain the differences between SDMA and TDMA.   (8 marks)

    (B) Explain the basic function of CDMA with an example.   (8 marks)

2. (A) Describe how localization and roaming are done in GSM.   (8 marks)

    (B) Give an account on Digital Video Broadcasting (DVB).   (8 marks)

3. (A) Compare IEEE802.11, HiperLAN2 and Bluetooth with regard to their ad-hoc capabilities.

    (B) Differentiate between infra-red and radio transmission.

                                                                        (10 + 6 = 16 marks)

4. (A) Discuss the different methods for TCP layer transmission for mobile networks.   (8 marks)

    (B) Explain mobile ad-hoc network security.   (8 marks)

5. (A) Give an account on WTA architecture with a diagram.   (8 marks)

    (B) Explain the design and principles of WAP operations.   (8 marks)

6. (A) Give an account on wireless transmission.   (8 marks)

    (B) Explain how agent discovery and IP packet delivery taking place in Mobile IP.   (8 marks)

7. (A) Explain the architecture of GSM network.   (8 marks)

    (B) Discuss the working of DHCP.   (8 marks)

8. (A) Explain the functions of MAC layer in Bluetooth.   (8 marks)

    (B) Explain about Wireless Telephony application.   (8 marks)

                                                                        [5 × 16 = 80 marks]