C 22530 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2022

(CBCSS)

Computer Science

CSS 4E 04 G—WEB ANALYTICS

(2019 Admission onwards)

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

Section A (Short Answers)

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

1. What is "data contradiction" ?
2. What is a log file ?
3. What is a key performance indicator ?
4. List and explain any four Google data Analytics tools.
5. What do you mean by competitive intelligence ?
6. Why do we require search engine optimization ?
7. Give examples of metrics in Google.

(4 × 2 = 8 weightage)

Turn over

Section B (Short Essays)

Answer any **four** *questions.*

Each question carries 3 *weightage.*

8. Describe the scope of Web Analytics.
9. Write a note on Log file analysis.
10. Analyze the different types of "Goals".
11. Outline the key features of Google Analytics.
12. Write a note on Google Analytics reports.
13. Give an overview of internal site search Analytics.
14. Write a note on Funnel optimization.

(4 × 3 = 12 weightage)

Section C (Essays)

Answer any **two** *questions.*

Each question carries 5 *weightage.*

15. Discuss various aspects in the analysis of web users.
16. Discuss in detail how Google Analytics works.
17. Explain A/B testing and multivariate testing.
18. Describe the need and the process of content optimization.

(2 × 5 = 10 weightage)

C 22529 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER M.Sc. DEGREE [REGULAR/SUPPLEMENTARY] EXAMINATION, APRIL 2022

April 2021 Session for SDE/Private Students

(CBCSS)

Computer Science

CSS 4E 04 F—ADVANCED JAVA PROGRAMMING

(2019 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

General Instructions

Covid Instructions are not applicable for Pvt/SDE students (April 2021 session)

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 registering of remote objects in RMI ?
2. What is the purpose of Tomcat Server ?
3. What is difference between GenericServlet and HttpServlet ?
4. What is Stateless Session Bean in EJB ?
5. What are the standard actions available in JSP ?
6. What is a configuration object in hibernate ?

(4 × 2 = 8 weightage)

Turn over

Section B

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

7. Differentiate stubs and skeletons in RMI.
8. Write the differences between doGet() and doPost() methods in servlet ?
9. Explain how the content of a text box of a form can be accessed in JSP.
10. What are the components of Session Beam?
11. Explain Scriptlet, Expression and Declaration in JSP with example.
12. What is an ORM tool ?
13. Explain hibernate mapping file.
14. Explain the steps involved in deploying an enterprise bean object.

(4 × 3 = 12 weightage)

Section C

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

15. RMI is an important feature of java. Explain the steps and architecture of RMI application in java.
16. What are the types of Enterprise Bean ? Explain each in detail.
17. Explain the working life-cycle of JSP?
18. Explain Hibernate architecture.

(2 × 5 = 10 weightage)

C 22527 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER M.Sc. DEGREE [REGULAR/SUPPLEMENTARY] EXAMINATION, APRIL 2022

April 2021 Session for SDE/Private Students

(CBCSS)

Computer Science

CSS 4E 04 D—STORAGE AREA NETWORKS

(2019 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

General Instructions

Covid Instructions are not applicable for Pvt/SDE students (April 2021 session)

1. *In cases where choices are provided, students can attend* **all** *questions in each section.*
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4. *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. What is the basic working principle of fibre optics ?
2. What is the role of SAN Switches ?
3. What is fault tolerance in SAN ?
4. What is Full-Mesh fabric ?
5. What is Zoning ?
6. What do you mean by Manageability in the list of critical requirements of SAN ?
7. What is TELNET ?

(4 × 2 = 8 weightage)

Turn over

Section B

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

8. What is the need for a separate network for storage ? Why can LAN not be used ?
9. What do you mean by Fibre Channels (FC) Storage Area Networks ?
10. Distinguish the Accessibility and Availability requirements of SAN ?
11. What do you mean by in-band management out-of-band management in the Storage network ?
12. What are the common Topologies in SAN ?
13. What are the basic security guidelines of SAN ?
14. Write a short note on the future of SANS.

(4 × 3 = 12 weightage)

Section C

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

15. Explain the importance of storage networks and their building blocks.
16. What are the most common SAN protocols, give a note on each ?
17. How the backup and recovery are managed in SAN, explain ?
18. Explain the different types of security threats in SAN.

(2 × 5 = 10 weightage)

C 22526 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER M.Sc. DEGREE [REGULAR/SUPPLEMENTARY] EXAMINATION, APRIL 2022

(CBCSS)

Computer Science

CSS 4E 04 C—SOFTWARE DEVELOPMENT FOR PORTABLE DEVICES

(2019 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

General Instructions

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Section A

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

1. How to add a hyperlink that refers to another HTML document in the same directory ?
2. What is the purpose of hidden controls ?
3. What is the specific purpose of append() function in JQuery.
4. What are XML layouts in Android ?
5. How can a file be loaded in the android application?
6. How to access the location parameters in a mobile application?
7. What is JSON?

(4 × 2 = 8 weightage)

Section B

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

8. Write the HTML tags for embedding an image that has been saved in the local directory.
9. Write the HTML code for creating a table with 4 columns and 5 rows.
10. Write the purposes of hover(), foucs(), blur() functions in JQuery.
11. Write a short note on the android manifest.
12. What is Android Debug Bridge ?
13. Write a note on the database that has generally used android applications.
14. Write briefly on any IDE used for mobile application development.

(4 × 3 = 12 weightage)

Section C

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

15. Explain any five formatting tags and their attributes.
16. Briefly explain the purpose of JQuery and its core features.
17. Draw the architecture of Android OS and explain the application activity of Android.
18. How to store data locally in an Android app ? Explain.

(2 × 5 = 10 weightage)

C 22525 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER M.Sc. DEGREE [REGULAR/SUPPLEMENTARY] EXAMINATION, APRIL 2022

(CBCSS)

Computer Science

CSS 4E 04 B—ADVANCED TOPICS IN DATABASE DESIGN

(2019 Admission onwards)

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. Give an example for ER-Diagrams with inheritance.
2. What is the concept of persistent programming languages ?
3. Give some examples for ODBMS.
4. List the features of SQL3.
5. What do you mean by nested relations ?
6. What is the client-server architecture ?
7. Write any application areas of geographic information systems.

(4 × 2 = 8 weightage)

Turn over

Section B

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

8. Specialization and generalization concepts are possible in ER-Diagrams.

9. What are constructors and how it is important in OODBMS ?

10. Draw the general architecture of OODBMS.

11. What is query optimization ?

12. What is the importance of parallel databases ?

13. What is web service and how is it related to XML ?

14. Write a short note on deductive databases.

(4 × 3 = 12 weightage)

Section C

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

15. What is the importance of the Extended Entity-Relationship model in the design of an object-oriented database ? Explain your answer with an example.

16. Write the advantages of Object-Oriented databases over the traditional models.

17. What are the challenges in the design of the ORDBMS database ? Design such a database with a minimum of two tables.

18. Explain the distributed databases, covering all the functional aspects of it.

(2 × 5 = 10 weightage)

C 22524 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER M.Sc. DEGREE [REGULAR/SUPPLEMENTARY] EXAMINATION, APRIL 2022

(CBCSS)

Computer Science

CSS 4E 04 A—DIGITAL IMAGE PROCESSING

(2019 Admission onwards)

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 a digital image.
2. In which property the Hadamard transform differs from the Walsh transform ?
3. How is the principal component analysis related to Hotelling transform ?
4. How to convert an RGB image into a grey level ?
5. What do you mean by image subtraction ?
6. What do you mean by image restoration ?
7. What are the compression standards ?

(4 × 2 = 8 weightage)

Turn over

Section B

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

8. How is the human visual system related to the study of digital image processing ?
9. How the sampling and quantization can be distinguished ?
10. Write the Properties of the Walsh Transform.
11. Write a note on sharpening filters.
12. Write a note on noise models and Image degradation.
13. How are the compression algorithms evaluated ?
14. What are homomorphic filters ?

(4 × 3 = 12 weightage)

Section C

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

15. Explain the functional aspects of every element in a digital image processing system.
16. Explain the importance of frequency domain representation of an image with the help of the Discrete Fourier transform.
17. What is the edge map of an image ? Explain the working of any edge detection algorithm.
18. What do you mean by Lossless compression of images, explain the working of any such algorithm.

(2 × 5 = 10 weightage)

C 22523 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER M.Sc. DEGREE [REGULAR/SUPPLEMENTARY] EXAMINATION, APRIL 2022

April 2021 Session for SDE/Private Students

(CBCSS)

Computer Science

CSS 4E 03 G—DATA ANALYTICS USING PYTHON

(2019 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

General Instructions

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Section A (Short Answer)

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

1. Analyze the role of machine learning in Artificial Intelligence.
2. Justify the relevance of Data Science as an area of study.
3. Identify the key features of Python.
4. Explain "Packages".
5. List any *two* types of machine learning algorithms / architecture , identifying any one data science problem solved using the algorithm.

6. List any *four* classification algorithms available in Scikit-learn. How will you measure accuracy of classification.

7. List the steps in data analysis.

(4 × 2 = 8 weightage)

Section B (Short Essay)

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

8. Explain supervised and unsupervised learning.

9. Explain classification. How is it different from prediction?

10. Discuss List, Set, Tuple and Dictionary with examples.

11. Discuss application of machine learning in feature selection.

12. Explain how data generalization is achieved with machine learning.

13. Write a note on regularization techniques.

14. Explain data set formation in data analysis.

(4 × 3 = 12 weightage)

Section C (Essay)

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

15. Discuss in detail the following Python libraries highlighting major functions and incorporating suitable illustrations :

    (i) Numpy ; and (ii) Matplotlib.

16. Discuss in detail the steps in building a predictive model, taking suitable approach and examples, incorporating illustrations.

17. Discuss in detail any one algorithm for clustering. Explain cluster validation and any two approaches for cluster validation.

18. Consider a suitable case for Regression, identify the data requirement and, explain the process of model building and assessment. Provide essential details of the implementation of the model using Python.

(2 × 5 = 10 weightage)

C 22522 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2022

(CBCSS)

Computer Science

CSS 4E 03 F—WEB ENGINEERING

(2019 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

Section A

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

1. What are the purposes of Web Engineering ?
2. What are the different types of requirements that can be identified for web applications ?
3. Define the client-server model.
4. What do you mean by hypertext modeling ?
5. What are the things covered under the functional design of a web application ?
6. What is the role of a tester in web application development ?
7. How is risk management important in Web development projects ?

(4 × 2 = 8 weightage)

Section B

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

8. What are the characteristics of web applications ?
9. Write a note on the requirement specifications for web applications.
10. What do you mean by the layered architecture of web applications ?
11. What is the role of information design in web application design ?

12. Write the importance of device-independent web application development.

13. What do you mean by stress testing ? Write its importance in web applications with an example ?

14. What is test-driven development ? Write its importance in web development.

(4 × 3 = 12 weightage)

Section C

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

15. Explain the prospects and evolution of web applications.

16. Explain the possible requirement elicitation methods for web applications.

17. What are the challenges in the web application user interface design, and how can they be solved ?

18. Explain the importance of testing web applications by listing any five test cases and how they can be tested.

(2 × 5 = 10 weightage)

C 22521 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER M.Sc. DEGREE [REGULAR/SUPPLEMENTARY] EXAMINATION, APRIL 2022

(CBCSS)

Computer Science

CSS 4E 03 E—FUNDAMENTALS OF BIG DATA

(2019 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

General Instructions

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Section A

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

1. What is the role of distributed computing in bigdata and its processing ?
2. What do you mean by graph databases ?
3. How do you define operationalized analytics ?
4. What is the use of min() and max() in MongoDB ?
5. What is checkpointing in Hadoop ?
6. What are the main components of MapReduce Job ?
7. What is the difference between Block and Split in Hadoop ?

(4 × 2 = 8 weightage)

Turn over

Section B

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

8. How do the structured and unstructured data differ ?
9. Write the significance and applications of spatial databases ?
10. What do you mean by data analytics and how does it differ from data analysis ?
11. How the data insertion and querying are done in MongoDB ?
12. What is the most significant difference between traditional RDBMS and Hadoop ?
13. What is Shuffling and Sorting in MapReduce ?
14. What is NameNode ? Is it related to Secondary NameNode ?

(4 × 3 = 12 weightage)

Section C

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

15. Explain the challenges and prospects of bigdata.
16. Write the importance of text analytics by citing some applications. Give an abstract view of the text analytics process.
17. Explain the HDFS Architecture and its key features.
18. What is MapReduce ? Illustrate a simple example of the working of MapReduce.

(2 × 5 = 10 weightage)

C 22519 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2022

(CBCSS)

Computer Science

CSS 4E 03 C—SYSTEM SECURITY

(2019 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

General Instructions

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Section A

Answer any **four** *questions.*

Each question carries 2 *weightage.*

1. How do you define computer criminals ?
2. What is Salami attack ?
3. What do you mean by memory address protection in OS ?
4. List the challenges of the authentication process in OSs.
5. What are the characteristics of a good password ?
6. What do you mean by sensitive data in databases ?
7. Write the steps in risk analysis while planning for organizational security ?

(4 × 2 = 8 weightage)

Turn over

Section B

Answer any **four** *questions.*

Each question carries 3 *weightage.*

8. How confidentiality' integrity and availability are related ?
9. Write the attacking strategy of any computer virus.
10. Write a note on Non-malicious program errors.
11. What are the mechanisms available in OS for file protection ?
12. Write the importance of multilevel security in databases.
13. Write a note on the importance of organizational security policies.
14. How can we control the threats caused by computer programs ?

(4 × 3 = 12 weightage)

Section C

Answer any **two** *questions.*

Each question carries 5 *weightage.*

15. Explain the terms - interception, interruption, modification and fabrication with the help of some examples.
16. What threats can occur in computer programs, and how can they be effectively controlled ?
17. Explain the concepts of trusted operating systems and what are the expectations ?
18. Write the importance of security policies. Explain your answer with reference to any part of IT policy.

(2 × 5 = 10 weightage)

C 22517 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER M.Sc. DEGREE [REGULAR/SUPPLEMENTARY] EXAMINATION, APRIL 2022

(CBCSS)

Computer Science

CSS 4E 03 A—DATA COMPRESSION

(2019 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

General Instructions

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Section A

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

1. What do you mean by data independence in the database ?
2. List the duties of a database administrator.
3. You may be aware of LZ77 sliding window ; what do you mean by a sliding window ?
4. What do you mean by codebook and lookup ?
5. What are the frames in a digital video ?
6. Why do we need to know the human auditory system while studying Audio compression ?
7. What do you mean by a fractal ?

(4 × 2 = 8 weightage)

Turn over

Section B

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

8. Write the advantages of DBMS over the ordinary file system.
9. What do you mean by weak and strong entity sets.
10. Write a note on JPEG image compression.
11. Write the importance of DWT image compression.
12. How can the Fourier transform be used for image compression ?
13. How can we evaluate a compression method ?
14. Write a short note on GIF images.

(4 × 3 = 12 weightage)

Section C

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

15. Identify the possible classes or tables for a software system for petrol filling stations. Draw the entity-relationship (ER) of the said software system.
16. We can generally classify image compression as lossy and lossless compression. List any two methods for each class and explain the working of one method from lossy image compression.
17. What do you mean by wavelets ? Write the properties and explain the working of Haar transform.
18. According to your experiences which is the simplest and most efficient compression algorithm you have implemented ? Share your experiences while implementing that particular algorithm.

(2 × 5 = 10 weightage)

C 21052

Name.....

Reg. No.....

FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2022

(CCSS)

Computer Science

CSC 4E 22—MOBILE COMMUNICATION

(2019 Admissions)

Time : Three Hours Maximum : 80 Marks

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

1. A) What is Multiplexing ? Explain any *two* types of multiplexing techniques. (10 marks)

   B) Give a brief account on polling in network management. (6 marks)

2. A) What are the various types of satellites used in mobile computing ? Explain the concept of routing and localization in satellites. (12 marks)

   B) Explain about any *two* GSM specified logical channels. (4 marks)

3. A) Describe Ad-hoc networks and their applications. (8 marks)

   B) Discuss the features of Bluetooth enabled devices and their security features. (8 marks)

4. A) Explain the working phases of Mobile Internet Protocol. (10 marks)

   B) Explain the working of snooping TCP. (6 marks)

5. A) Describe the features of Wireless Transaction protocol. (8 marks)

   B) Explain the components of WAE. (8 marks)

6. A) Compare and contrast classical and slotted aloha. (8 marks)

   B) Explain the registration process in Mobile IP with suitable diagram. (8 marks)

7. A) Explain the functions of base station and mobile switching centre. (8 marks)

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

8. A) Explain the working principles of HiperLAN. (8 marks)

   B) Explain the communication between mobile devices using WLAN network through access point (hotspot). (8 marks)

C 21051

Name.....

Reg. No.....

FOURTH SEMESTER P.G. DEGREE EXAMINATION, APRIL 2022

(CCSS)

Computer Science

CSC 4C 16—SOFTWARE ENGINEERING

(2019 Admissions)

Time : Three Hours Maximum : 80 Marks

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

1. A) Describe Evolutionary Process models in software engineering. (6 marks)

   B) What are Agility Principles ? Explain. (6 marks)

   C) What is prototyping ? When is it recommended ? (4 marks)

2. A) Discuss the seven distinct tasks of Requirement engineering process. (8 marks)

   B) What are use cases ? Discuss with an example. (8 marks)

3. A) Explain Abstraction and Separation of concerns concept in Software design.

   B) Discuss about object-oriented software design principles. (8 + 8 = 16 marks)

4. A) Explain about ISO 9126 quality factors. (8 marks)

   B) What are seven principles of risk management ? Explain any four of them. (8 marks)

5. A) Explain about basis path testing with an illustration. (8 marks)

   B) Explain control structure testing with examples. (8 marks)

6. A) What isprocess pattern in software engineering ? Describe process pattern template.

   B) Explain the concept of cohesion and coupling in software design. (8 + 8 = 16 marks)

7. A) Explain the techniques for software cost estimation. (8 marks)

   B) Differentiate between alpha and beta testing. (8 marks)

8. A) Explain the functional and non-functional requirement with respect to software system with example.

   (8 marks)

   B) Explain three golden rules for user interface design. (8 marks)