22MCAH301 Reg No : .....

CHOICE BASED CREDIT SYSTEM

MCA THIRD SEMESTER DEGREE EXAMINATION APRIL 2024

MASTER OF COMPUTER APPLICATIONS

Research Methodology

Duration:3 Hours **Max Marks:70**

Part A

I. Answer any THREE of the following : **3×4= 12**

1. Explain any four important qualities for good research.
2. Explain the characteristics that describe research design.
3. Write a note on the importance of citation in any research paper.
4. Write short notes on patents.

Part B

II. Answer any FOUR of the following : **4×7= 28**

5. Explain the classification of types of Research.
6. Throw light on the layout of thesis at the end of research process.
7. Explain the concept of simple random sampling with an example.
8. Give the general outline of a Technical report.
9. Explain the various types of marks used for branding products and services.

Part C

III. Answer any THREE of the following : **3×10= 30**

10. Explain the steps in defining a research problem.
11. "Data collection through questionnaire is the most extensively employed method in business surveys". Justify the statement.
12. Enumerate the various factors that affect Literature Review. Explain why Literature Review is important in research.
13. "Plagiarism plays a vital role in research". Justify the statement.

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22MCAH302 Reg No : .....

CHOICE BASED CREDIT SYSTEM

MCA THIRD SEMESTER DEGREE EXAMINATION APRIL 2024

MASTER OF COMPUTER APPLICATIONS

Machine Learning and Deep Learning

Duration:3 Hours **Max Marks:70**

Part A

I. Answer any THREE of the following : **3×4= 12**

1. Explain with an example, supervised and unsupervised algorithm.
2. Explain the four metrics used in confusion Matrix.
3. Explain 'ReLu function' as an activation function within a neural network.
4. Explain One To Many in Recurrent Neural Networks (RNNs).

Part B

II. Answer any FOUR of the following : **4×7= 28**

5. Elaborate on the mathematical representation of dimensionality reduction in the context of Non-Negative Factorization with an illustration.
6. Explain supervised machine learning classification, provide an example, and mention four commonly used algorithms.
7. Consider a workclass feature in a dataset having possible values of "Government Employee", "Private Employee", "Self Employed", and "Self Employed Incorporated". Apply one hot encoding and explain the working of it.
8. Elaborate on the working of Deep learning algorithms.
9. Differentiate between CNN and RNN.

Part C

III. Answer any THREE of the following : **3×10= 30**

10. Elaborate on the concepts of loss function and information theory within the context of softmax regression.
11. Apply and analyse k-Nearest Neighbors classifier model on make_forge dataset available in mglearn.
12. Outline the concept of scaling.Explain RobustScaler and MinMaxScaler with an illustration.
13. Discuss on the advantages and disadvantages of CNN.

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22MCAH303 Reg No : .....

CHOICE BASED CREDIT SYSTEM

MCA THIRD SEMESTER DEGREE EXAMINATION APRIL 2024

MASTER OF COMPUTER APPLICATIONS

Information and Cyber Security

Duration:3 Hours **Max Marks:70**

Part A

I. Answer any THREE of the following : **3×4= 12**

1. Differentiate between security policies, standards, procedures and guidelines.
2. Explain the role of security director in information security.
3. Differentiate between static NAT and dynamic NAT.
4. Differentiate between network based data and host based data in evidence acquisition.

Part B

II. Answer any FOUR of the following : **4×7= 28**

5. Describe the various service models in cloud computing with examples.
6. Summarize the different components that go into the building of a security program.
7. Define SSL/TLS and highlight its disadvantages associated with it in secure communication protocols.
8. Explain some of the common email header fields. Explain their significance in the context of email communication and message delivery.
9. Examine the various application risks associated with mobile devices.

Part C

III. Answer any THREE of the following : **3×10= 30**

10. Analyze the significance of various VPN protocols.
11. Discuss the various aspects of threats that need to be considered in cyber security.
12. Explain the concepts of revocation and role separation as implemented by Certificate Authorities.
13. Illustrate the significance of using Key Performance Indicators and heat map with example.

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22MCAS304 Reg No : .....

CHOICE BASED CREDIT SYSTEM

MCA THIRD SEMESTER DEGREE EXAMINATION APRIL 2024

MASTER OF COMPUTER APPLICATIONS

User Interface Design

Duration:3 Hours **Max Marks:70**

Part A

I. Answer any THREE of the following : **3×4= 12**

1. Illustrate the importance of understanding personality differences in designing products and services.
2. Apply the principles of design to determine the presentation sequence of items in application.
3. Discuss the concept of visual perception in interface design
4. Apply appropriate search terms and filters to perform image searches.

Part B

II. Answer any FOUR of the following : **4×7= 28**

5. Summarize the approaches of designing three dimensional user interfaces.
6. Explain the similarities and differences between GOMS(Goals, operators, methods, and selection rules) and the Keystroke-Level Model in predicting user task performance.
7. Explain the advantages and disadvantages of user-centered design.
8. Compare and contrast conceptual model and mental model of user in user interface.
9. Compare and contrast the different user research method in design.

Part C

III. Answer any THREE of the following : **3×10= 30**

10. Evaluate the concept of interacting beyond individuals in interface design.
11. Apply the eight golden rules of interface design to critique an existing user interface.
12. Evaluate the specific advantages of WYSIWYG editors in direct manipulation interface.
13. Compare and contrast the challenges faced in visualizing user data.

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22MCAS305 Reg No : .....

CHOICE BASED CREDIT SYSTEM

MCA THIRD SEMESTER DEGREE EXAMINATION APRIL 2024

MASTER OF COMPUTER APPLICATIONS

C# and .NET Technology

Duration:3 Hours **Max Marks:70**

Part A

I. Answer any THREE of the following : **3×4= 12**

1. Explain the role of CLS in .NET Architecture in detail.
2. What is an event in C#? How does it relate to delegates?
3. Explain how Page directive influences the behavior and properties of ASP.NET Web Form.
4. Explain the use of Data Sets in ADO.NET.

Part B

II. Answer any FOUR of the following : **4×7= 28**

5. What are Jagged Arrays? Develop a C# program to print Pascals Triangle using Jagged Array.
6. Describe the concept of method overloading in C# along with an example.
7. Compare and contrast ref and out parameters in C# along with appropriate examples.
8. Explain the use of RangeValidator and CompareValidator in performing input data validations in ASP.NET.
9. Explain in detail SQLConnection and SQLCommand classes used in ADO.NET.

Part C

III. Answer any THREE of the following : **3×10= 30**

10. Explain the various methods for managing state information in ASP.NET Web Forms.
11. What are structures in C#? Design a C# program to handle vector operations using structures. The structure must include methods to calculate magnitude, performing addition and displaying vectors.
12. Design a C# program that includes an abstract class MultimediaFile which represents common properties such as file name and duration. Implement two subclasses: AudioFile and VideoFile with additional properties like artist for audio files and resolution for video files.
13. Explain in detail ADO.NET connected architecture.

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22MCADE315 Reg No : .....

CHOICE BASED CREDIT SYSTEM

MCA THIRD SEMESTER DEGREE EXAMINATION APRIL 2024

MASTER OF COMPUTER APPLICATIONS

Ethical Hacking

Duration:3 Hours **Max Marks:70**

Part A

I. Answer any THREE of the following : **3×4= 12**

1. Analyze the measures of each CVSS temporal metrics on overall assessment of a vulnerability.
2. Evaluate the different reasons behind the virus attack.
3. Discuss the methodologies behind two different types of web application-related attacks.
4. Explain the concept of information security.

Part B

II. Answer any FOUR of the following : **4×7= 28**

5. Illustrate the various steps involved in sniffing process.
6. Explain the benefits of penetration testing, which helps in identifying security vulnerabilities.
7. Compare and contrast the characteristics of different types of spyware.
8. Explain the application level session hijacking in session hijacking.
9. Identify and explain the four important attack vectors commonly used in mobile attacks.

Part C

III. Answer any THREE of the following : **3×10= 30**

10. Analyze the effectiveness of various evasion techniques in bypassing different types of IDS systems.
11. Compare and contrast ethical hacking and non ethical hacking.
12. Evaluate the various steps involved in malware analysis.
13. Evaluate the trade-offs between the benefits of BYOD and the associated security risks.

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