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**MCA (COMM) (PART-II) (SEMESTER - IV) CBCS**  
**Examination, April 2024**  
**ARTIFICIAL INTELLIGENCE AND SOFT COMPUTING**  
**Sub. Code : 83615**

Day and Date : Thursday, 16/05/2024

Total Marks : 70

Time : 02.30 P.m. to 05.30 p.m.

- Instructions :**
- 1) Q. 1 and Q. 7 are compulsory.
  - 2) Attempt any three(3) question from Q.2 to Q.6.
  - 2) Figures to right indicate Full marks.

**Q1) Multiple Choice Questions.**

[08]

- 1) Which of the following is an expansion of Artificial Intelligence application?
 

A) Game Playing	B) Planning and Scheduling
C) Diagnosis	D) All of the mentioned
- 2) Which search implements stack operation for searching the states?
 

A) Depth-First Search	B) Breadth-First Search
C) Linear Search	D) Optimal Search
- 3) A\* algorithm is based on -----
 

A) Breadth-First-Search	B) Depth-First-Search
C) Best-First-Search	D) Hill climbing
- 4) Core of soft computing is
 

A) Fuzzy computing, neural computing, genetic algorithm	
B) Fuzzy network and artificial intelligence	
C) Neural science	
D) Genetic science	

- 5) Chromosomes are actually.....
- A) Line representation                      B) String representation  
C) Circular representation                  D) All of these
- 6) What is the first step in Fuzzy logic?
- A) Fuzzification                                  B) Fuzzy Inference System  
C) Defuzzification                                D) None of these
- 7) Artificial neural network is used for.....
- A) Pattern recognition                        B) Classification  
C) Clustering                                      D) All of the above
- 8) The process of adjusting the weight is known as.....
- A) Activation                                      B) Synchronization  
C) Learning                                        D) None of te mentioned

Q2) What is fuzzy logic? Explain fuzzification, fuzzy inference and defuzzication with suitable example. [14]

Q3) Explain the following searching techniques with example. [14]

- 1) Depth First                                      2) Breadth First

Q4) Illustrate how to solve optimization problem using genetic algorithm with example. [14]

Q5) A) Describe the different characteristics of soft computing in detail. [07]

B) What is forward and backward chaining in knowledge representation? [07]

Q6) What is Neural network? Explain different components of Neural Network. [14]

Explain the simulation of biological neural network with artificial neural network.

Q7) Write Short Notes. (Any Four)

[20]

- 1) History of Artificial Intelligence
- 2) Hill climbing
- 3) Applications of Fuzzy logic
- 4) Propositional logic
- 5) Activation functions.

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**MCA (PART-II) (SEMESTER - IV) (CBCS)**

**Examination, April 2024**

**ADVANCE JAVA PROGRAMMING (AJP)**

**Sub. Code : 83616**

**Day and Date : Friday, 17/05/2024**

**Total Marks : 70**

**Time : 2.30 p.m. to 5.30 p.m.**

- Instructions :**
- 1) Q. 1 and Q. 7 are compulsory.
  - 2) Attempt any three(3) question from Q.2 to Q.6.
  - 2) Figures to right indicate Full marks.

**Q1) Multiple Choice Questions.**

**[08]**

- 1) Which of the below is not a session tracking method?
  - A) URL rewriting
  - B) History
  - C) Cookies
  - D) session object
- 2) "response" is instance of which one of the following classes?
  - A) Response
  - B) HttpResponse
  - C) HttpServletResponse
  - D) ServletResponse
- 3) In jsp, java code is embedded under which tag in JSP?
  - A) Declaration
  - B) Scriptlet
  - C) Expression
  - D) Comment
- 4) JSP is a \_\_\_\_\_ side program in a web application?
  - A) Client
  - B) Server
  - C) Tomcat
  - D) Applet

- 5) How can we connect to database in a web application?
- A) Oraclesql developer                      B) JDBC drivers  
C) mysql    D) none of these
- 6) Which class can handle any type of request so that it is protocol- independent?
- A) GenericServlet                              B) HttpServlet  
C) Both A & B                                      D) None of the above
- 7) What is an ORM stands for?
- A) Object Rate Mapping                      B) Object Relational Mapping  
C) Operating Related Mapping              D) Operating Rate Mapping
- 8) The term POJO stands for\_\_\_\_\_.
- A) Plain Old Java Object  
B) Performance Old Java Object  
C) Performance Optimize Java Object  
D) None of the above
- Q2) i) Illustrate session tracking technique using Session object                      [07]  
with suitable example.
- ii) Differentiate between JSP and Servlet.    [07]
- Q3) Describe in detail different scripting elements in JSP with example.              [14]
- Q4) i) Explain the steps to access database in servlet.                                      [07]  
ii) What is MVC? Explain MVC architecture with its advantages.                      [07]
- Q5) i) Explain different features of struts.    [07]  
ii) What is hibernate? Explain its architecture.    [07]



- Q6) i) Explain the life cycle of JSF in detail. [07]
- ii) Identify the different components of GWT. [07]
- Q.7) Write short notes (Any Four) [20]
- 1) JDBC Drivers
  - 2) Implicit objects in JSP
  - 3) Servlet Life Cycle
  - 4) O-R mapping
  - 5) Spring AOP
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**MCA (COMM) (PART-II) (SEMESTER - IV) CBCS**

**Examination, April 2024**

**INTERNET OF THINGS (INTH)**

**Sub. Code : 83617**

**Day and Date : Saturday, 18/05/2024**

**Total Marks : 70**

**Time : 2.30 p.m. to 5.30 p.m.**

- Instructions :**
- 1) Q. 1 and Q. 7 are compulsory.
  - 2) Solve any three from Q.2 to Q.6.
  - 2) Figures at right indicate.

**Q1) Choose correct alternative.**

**[08]**

- 1) Which of the following is not an IoT platform?
  - A) Amazon Web Services
  - B) Microsoft Azure
  - C) Salesforce
  - D) Flipkart
- 2) Which layer is used for wireless connection in IoT devices?
  - A) Application layer
  - B) Network layer
  - C) Data link layer
  - D) Transport layer
- 3) Which of the following protocol is used to link all the devices in the IoT?
  - A) HTTP
  - B) UDP
  - C) Network
  - D) TCP/IP
- 4) What is the component of an IoT system that executes a program?
  - A) A sensor
  - B) A microcontroller
  - C) An actuator
  - D) A digital to analog converter





Q.7) Write short notes (Any Four)

[20]

- 1) Bluetooth
  - 2) Web Server for IOT
  - 3) Raspberry Pi with Python
  - 4) Various platforms of IOT
  - 5) Hardware components of Arduino.
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**M. C. A. (COMMERCE) (CBCS) (Semester - IV)**

**Examination, April - 2024**

**Optional Group**

**Blockchain Technology (BCT)**

**Sub. Code : 83618**

**Day and Date : Tuesday, 21/05/2024**

**Total Marks : 70**

**Time : 2.30 p.m. to 5.30 p.m.**

- Instructions :**
- 1) **Figures to right indicate full marks.**
  - 2) **Question No. 1 and Question No. 7 are compulsory.**
  - 3) **Solve any three questions from question No. 2 to Question No. 6.**

**Q.1 Multiple Choice Questions.**

**[8]**

- 1) What is a blockchain?
  - a) A centralized ledger
  - b) A Currency
  - c) A type of cryptocurrency
  - d) A distributed ledger on peer to peer network
- 2) What is a node?
  - a) A Blockchain
  - b) A computer on Blockchain network
  - c) A type of cryptocurrency
  - d) An exchange
- 3) A miner is \_\_\_\_\_
  - a) Computers that validate and process blockchain transactions
  - b) A type of blockchain
  - c) A person doing calculations to verify a transaction
  - d) An algorithm that predicts the next part of the chain

**P.T.O.**

- 4) Bitcoins are created as a reward for a process known as?
- a) Ledger
  - b) Mining
  - c) Wallet
  - d) Bubble
- 5) What is a smart contract?
- a) An Online contract
  - b) Digital Contract
  - c) Programs stored on a block chain that run when predetermined conditions are met
  - d) All of these
- 6) Blockchains are stored in form of?
- a) Circle
  - b) Block
  - c) Line
  - d) Wallet
- 7) What powers the Ethereum Virtual Machine?
- a) Gas
  - b) Ether
  - c) Block rewards
  - d) Bitcoin
- 8) Public-Key cryptography is also known as \_\_\_\_\_
- a) asymmetric cryptography
  - b) symmetric cryptography
  - c) both a and b
  - d) None of these
- Q. 2** a) Explain the Data Structure used in Blockchain. [7]
- b) Illustrate the need of blockchain and Data Distribution in Blockchain. [7]
- Q. 3** a) Explain Bitcoin and its working in detail. [7]
- b) Write advantages and disadvantages of Bitcoin. [7]
- Q. 4** a) What is Blockchain Technology? Explain Blockchain Market in detail. [7]
- b) Describe the working of Public and Private key Security. [7]

- Q. 5** a) Elaborate Endpoint Vulnerabilities in Blockchain. [7]  
b) What is Ethereum? State the components of Ethereum. [7]
- Q. 6** a) Write applications of Blockchain in Music Industry. [7]  
b) What is Validator in Blockchain? Explain Blockchain Validation in detail. [7]
- Q. 7 Write short notes on (Any four) [20]**
- 1) Smart contracts
  - 2) CoCo Framework
  - 3) Application of Blockchain in Insurance.
  - 4) Digital Token
  - 5) DApp

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**MCA (COMM.) CBCS (PART-II) (SEMESTER - IV)****Examination, April 2024****RESEARCH METHODOLOGY (RESMT)****Sub. Code : 83622****Day and Date : Monday, 20/05/2024****Total Marks : 70****Time : 2.30 p.m. to 5.30 p.m.**

- Instructions :**
- 1) **Question No. 1 and Question No. 7 are compulsory.**
  - 2) **Attempt any three questions from Question No. 2 to Question No. 6.**

**Q1)** Choose correct alternatives for following questions from options given below.

**[08]**

- 1) Which of the following is the Objective of the Research?
  - A) To become familiar with a phenomenon
  - B) To test a hypothesis of a causal relationship between variables
  - C) To determine the frequency with which something occurs or with it is associated with something else.
  - D) All of these
- 2) \_\_\_\_\_ is the first step in the research process.
  - A) Collecting data
  - B) Formulating a research question
  - C) Analyzing data
  - D) Drawing conclusion
- 3) What is a research design?
  - A) A plan for data analysis
  - B) A method for data collection
  - C) A statistical technique
  - D) A framework for conducting research



- 4) What is a literature review?
- A) A summary of a book
  - B) A summary of research study
  - C) A summary of the literature on a particular topic
  - D) A summary of a movie
- 5) Hypothesis which explains the relationship between two variables is called.....
- A) Causal
  - B) Relational
  - C) Descriptive
  - D) Tentative
- 6) Which of the following is not a “Graphic representation”?
- A) Pie Chart
  - B) Bar Chart
  - C) Table
  - D) Histogram
- 7) Questionnaire is a .....
- A) Research method
  - B) Measurement technique
  - C) Tool for data collection
  - D) Data analysis technique
- 8) Choose the correct option regarding the sampling method.
- A) the sample is the population’s part
  - B) it helps in determining sampling error
  - C) sampling saves money, time, and energy
  - D) all these options are correct
- Q2) i) What is research? Explain types of Research with example. [07]**
- ii) Describe features of a good research design. [07]
- Q3) i) What is sample design? Explain steps in sample design. [07]**
- ii) Define Hypothesis. Explain types of Hypotheses with examples. [07]

- Q4) i) Describe steps in Questionnaire design. [07]  
ii) Illustrate use of research in cloud computing with example. [07]
- Q5) i) Describe meaning and significance of Research Design. [07]  
ii) Explain cluster sampling in detail. [07]
- Q6) Explain statistical techniques used for data analysis in research. [14]
- Q7) Write short notes any four. [20]
- 1) Characteristics of Good Hypothesis.
  - 2) Mail survey.
  - 3) Contents of Research Design.
  - 4) Errors in Measurement.
  - 5) Testing the Validity of the Data
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**M.C.A. (Commerce) Part-II Sem- IV**  
**Practical Examination**  
**Subject: CC408-Lab based on CC401-**  
**Artificial Intelligence and Soft Computing**  
**Paper Code: 83625**

Day and Date : Saturday, 25-05-2024  
Time : 10 a.m. onwards

Total Marks : 50

**Instructions:**

- i) Attempt any two questions
- ii) Each question carry 15 marks
- iii) 10 Marks are reserved for journals
- iv) 10 Marks are reserved for viva.

**Q.1** Write a script to design Fuzzy control system for "Weather Reporting".

The state of the weather (bad, OK, perfect) will be determined according to the variables Temperature, Humidity and Precipitation.

Fuzzy Variables	Fuzzy Sets
Temperature	Cold, Good, Hot
Humidity	Dry, Good, Wet
Precipitation	No rain, Little, rain, Rain
Weather	Bad, OK, Perfect

**Q.2** Write a program to implement fuzzy set operations.

**Q.3** Implement Genetic Algorithm to guess Password with randomly generated initial sequence of letters, then mutate and change one random letter at a time until the sequence of letters is "University".

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Total No. of Pages : 2

**M.C.A. (Commerce) Part-II Sem- IV**  
**Practical Examination**  
**Subject: CC408-Lab based on CC401-**  
**Artificial Intelligence and Soft Computing**  
**Paper Code: 83625**

**Day and Date : Saturday, 25-05-2024**  
**Time : 10 a.m. onwards**

**Total Marks : 50**

**Instructions:**

- i) Attempt any two questions
- ii) Each question carry 15 marks
- iii) 10 Marks are reserved for journals
- iv) 10 Marks are reserved for viva.

**Q.1** Write script to implement Knapsack problem. You are going to spend a month in the wilderness. You're taking a backpack with you, however, the maximum weight it can carry is 20 kilograms. You have a number of survival items available, each with its own number of "survival points". You're objective is to maximize the number of survival points.

ITEM	SURVIVALPOINTS	WEIGHT IN KG
pocketknife	10.00	1.00
beans	20.00	5.00
potatoes	15.00	10.00
unions	2.00	1.00
sleeping bag	30.00	7.00
rope	10.00	5.00
compass	30,00	1.00



**Q.2** Write an R script to design Neural Network model to predict the species of the iris dataset (use package "nnet").

**Q.3** Take three fuzzy variables as service, food and tip (make sub-partitions of these three variables), Assign values to the variables. Set up rules as

- i) If service is poor or food is rancid, then tip is cheap
- ii) If service is good, then tip is average
- iii) If service is excellent or food is delicious, then tip is generous

Plot the graphs for each of them.

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**March-April 2024 Examination**

**M.C.A. (Commerce) CBCS -Part II Sem-IV Practical Examination**

**CC409 Lab Based on CC402 Advance Java**

**Subject Code : 83626**

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**Day and Date : Saturday, 25-05-2024**  
**Time : 02.00 pm onward**

**Total Marks : 50**

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**Instructions:**

- i) Attempt any two questions
- ii) Each question carry 30 marks
- iii) 20 Marks are reserved for journals
- iv) 20 Marks are reserved for viva.

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**Q.1** Write a Servlet that takes Gender (use of radio button), hobbies (Checkbox) from the user, and displays selected value to the next Servlet.

**Q.2** Create an HTML file AddCookies.html which contains four text boxes. When user enters the values in these text boxes and press the submit button, the values will be sent to AddCookies.java servlet and get saved in cookies.

**Q.3** Write a JSF application to convert temperature from celsius to fahrenheit?

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