R8448	Sub. Code
	551201

M.Sc. DEGREE EXAMINATION, APRIL – 2023

Second Semester

Computer Science

MACHINE LEARNING

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the questions.

1. Machine learning is a subset of which of the following.

   (a) Artificial intelligence

   (b) Deep learning

   (c) Data learning

   (d) None of the above

2. Which of the following is not a supervised learning?

   (a) PCA (b) Naive Bayesian

   (c) Linear Regression (d) Decision Tree Answer

3. What does K stand for in K-means algorithm?

   (a) Number of clusters

   (b) Number of data

   (c) Number of attributes

   (d) Number of iterations

4. Where does the Bayes rule can be used?

(a) Solving queries

(b) Increasing complexity

(c) Decreasing complexity

(d) Answering probabilistic query

5. Decision tree can be used for ————————.

(a) Classification (b) Regression

(c) Both (d) None of these

6. Which of the following is not weakness of Decision Tree?

(a) Able to generate understandable rules

(b) Can be computationally expensive to train

(c) Less appropriate for estimation tasks

(d) Prone to errors in classification problems with many class

7. Artificial Neural Network is based on which approach?

(a) Weak Artificial Intelligence approach

(b) Cognitive Artificial Intelligence approach

(c) Strong Artificial Intelligence approach

(d) Applied Artificial Intelligence approach

8. Choose the general limitations of the back propagation rule among the following.

(a) Slow convergence

(b) Scaling

(c) Local minima problem

(d) All of the above

9. Which approach is most suited to complex problems with significant uncertainty, a need for experimentation, and time compression?

(a) Simulation (b) Optimization

(c) Human intuition (d) Genetic Algorithms

10. What is the most significant phase in a genetic algorithm?

(a) Selection (b) Mutation

(c) Crossover (d) Fitness function

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Elucidate about decision tree learning.

Or

(b) Discuss about Heuristic space search.

12. (a) Explain about Gibbs algorithm.

Or

(b) Elaborate the derivation of K-Means algorithm.

13. (a) Describe about avoid over fitting the data in the decision tree.

Or

(b) Illustrate about instance based learning.

14. (a) Explain about Biological motivation in ANN.

Or

(b) Illustrate about derivation of Back propagation Rule.

15. (a) Enumerate about Hypothesis space search.

Or

(b) Write note on popular evolution and the schema theorem.

Part C $(5 \times 8 = 40)$

Answer any **five** questions.

16. Elaborate the types of ML and discuss the components in the design of a learning system

17. Describe the version spaces and candidate elimination algorithm.

18. Enumerate the interface in Bayesian network with example.

19. Construct a decision tree for the expression A = X AND Y OR Z.

20. Write note on multilayer networks.

21. Draw the model and explain the algorithm for Back propagation Drive necessary equations to depict the Back propagation error.

22. Explain about Genetic Programming with suitable example.

23. Illustrate about sequential covering algorithm.

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R8449	Sub. Code
	551202

M.Sc. DEGREE EXAMINATION, APRIL – 2023

Second Semester

Computer Science

COMPILER DESIGN

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the questions.

1. What is the output of lexical analyzer?

   (a) A set of RE (b) Syntax Tree

   (c) Set of Tokens (d) String Character

2. Which of the following grammar can be translated into DFAs?

   (a) Generic Grammar

   (b) Left Linear Grammar

   (c) Right Liner Grammar

   (d) All of the above

3. Which parser is known as the shift-reduce parser?

   (a) Bottom-up parser

   (b) Top-down parser

   (c) Both Top-down and bottom-up

   (d) None of the above

4. Which of the following parser is a top-down parser?

(a) An LALR parser

(b) A LR parser

(c) Operator precedence parser

(d) Recursive descent parser

5. Which of the following error is expected to recognize by semantic analyzer?

(a) Type mismatch

(b) Undeclared variable

(c) Reserved identifier misuse

(d) All of the above

6. Which attributes get values from the attribute values of their child nodes?

(a) Synthesized attributes

(b) Inherited attributes

(c) S-attributed SDT

(d) L-attributed SDT

7. Optimization can be categorized broadly into ———————— types.

(a) 2 (b) 3

(c) 4 (d) 5

8. A fragment of code that resides in the loop and computes the same value at each iteration is called a?

(a) Induction analysis

(b) Strength reduction

(c) loop-invariant code

(d) none of the above

9. Substitution of values for names whose values are constant, is done in

(a) Local optimization

(b) Loop optimization

(c) Constant folding

(d) None of the above

10. Peep-hole optimization is a form of

(a) Data flow analysis

(b) Local optimization

(c) Loop optimization

(d) Constant folding

Part B $(5 \times 5 = 25)$

Answer **all** the questions, choosing either (a) or (b).

11. (a) Explain about the importance of symbol table.

Or

(b) Differentiate NFA and DFA.

12. (a) Construct pars tree for the input string W = cad using top-down parser.

$S \to cAd \quad A \to ab \mid a$.

Or

(b) Enumerate the limitations of syntax analyzer.

13. (a) Illustrate about S-attributed definition with example.

Or

(b) Write a note on stack allocation of space.

14. (a) Explain about control flow.

Or

(b) Discuss about type checking with necessary diagram.

15. (a) Illustrate about loop optimizations.

Or

(b) Describe about optimization of basic blocks.

Part C $(5 \times 8 = 40)$

Answer any **five** questions.

16. Explain the various phases of compiler with diagram and example.

17. Draw NFA for the regular expression ab*– c + b* – c.

18. Write the algorithm for minimizing the stages of a DFA.

19. Elucidate shift reducing algorithm with example.

20. Discuss about runtime storage management.

21. Describe about back patching.

22. Illustrate about the issues in code generation with example.

23. Enumerate about Peephole optimization.

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R8450	Sub. Code
	551203

M.Sc. DEGREE EXAMINATION, APRIL – 2023

Second Semester

Computer Science

FUNCTIONAL PROGRAMMING USING PYTHON

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

Answer **all** the questions.

1. Which of the following functions can help us to find the version of python?

   (a) sys.version(1)

   (b) sys.version(0)

   (c) sys.version()

   (d) sys.version

2. Who developed Python Programming Language?

   (a) Wick van Rossum

   (b) Rasmus Lerdorf

   (c) Guido van Rossum

   (d) Niene Stom

3. What is the order of precedence in python?

(a) Exponential, Parentheses, Multiplication, Division, Addition, Subtraction

(b) Exponential, Parentheses, Division, Multiplication, Addition, Subtraction

(c) Parentheses, Exponential, Multiplication, Division, Subtraction, Addition

(d) Parentheses, Exponential, Multiplication, Division, Addition, Subtraction

4. Is Python case sensitive when dealing with identifiers?

(a) No

(b) Yes

(c) Machine dependent

(d) None of the mentioned

5. What does pip stand for python?

(a) Unlimited length

(b) All private members must have leading and trailing underscores

(c) Preferred Installer Program

(d) None of the mentioned

6. Is Python code compiled or interpreted?

(a) Python code is both compiled and interpreted

(b) Python code is neither compiled nor interpreted

(c) Python code is only compiled

(d) Python code is only interpreted

7. Which of the following statements is used to create an empty set in Python?

(a) ( ) (b) [ ]

(c) { } (d) set( )

8. Which one of the following is the use of function in python?

(a) Functions don't provide better modularity for your application

(b) You can't also create your own functions

(c) Functions are reusable pieces of programs

(d) All of the mentioned

9. What are the two main types of functions in Python?

(a) System function

(b) Custom function

(c) Built-in function and User defined function

(d) User function

10. The process of pickling in Python includes ————————

(a) Conversion of a Python object hierarchy into byte stream

(b) Conversion of a data table into a list

(c) Conversion of a byte stream into Python object hierarchy

(d) Conversion of a list into a data table

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Write a short notes on functional programming.

Or

(b) Explain the disadvantages of functional programming.

12. (a) With examples, explain 'lists that are mutable in Python.

Or

(b) Discuss about mutable data types with examples.

13. (a) Why should we have inner functions in Python?

Or

(b) What is a closure? Explain.

14. (a) With examples. Explain Iterables in Python.

Or

(b) Write a note on sequences.

15. (a) How will you define nested comprehension?

Or

(b) Explain about closures in Python.

Part C $(5 \times 8 = 40)$

Answer any **five** questions.

16. Discuss in detail the characteristics of functional programming.

17. Elaborate Aliases in Python in detail.

18. Describe about the problem with mutable objects in Python

19. Elucidate on recursion in Python in detail.

20. Bring out a detail study on creating anonymous functions in Python.

21. Explain in detail composing functions in Python.

22. Elaborate on iterators in Python with examples

23. Discuss Currying with examples in detail.

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R8451

Sub. Code
551204

M.Sc. DEGREE EXAMINATION, APRIL – 2023

Second Semester

Computer Science

WIRELESS SENSOR NETWORKS

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Which of the following is a collection of many separate networks?

   (a) LAN (b) MAN

   (c) WAN (d) PAN

2. What is the term used to describe the ability for networking devices from different manufacturers to communicate effectively?

   (a) Accessible (b) Interoperable

   (c) Portable (d) Scalable

3. The challenges we face in designing sensor network systems and applications include

   (a) Limited hardware

   (b) Limited support for networking

   (c) Limited support for software development

   (d) All of the above

4. What WLAN device provides communications management services to wireless workstations?

(a) Access point (b) Antenna

(c) Network adaptor (d) Repeater

5. Which one of the following is not a consideration when deciding between a WLAN and a wired LAN beyond the network medium?

(a) Scalability (b) Ease of installation

(c) Flexibility (d) RF Interferences

6. Which one of the following frequency bands is used for cordless phones?

(a) 40 mhz (b) 900 mhz

(c) 75 mhz (d) 300 mhz

7. A sensor network is designed to collect information from a ———— environment.

(a) Logical

(b) Physical

(c) Logical as well as Physical

(d) None of the above

8. A Sensor Network is designed to perform a set of high level information processing tasks such as

(a) detection (b) tracking

(c) classification (d) All the above

9. ———— are nodes that aid in passing traffic from one cluster to another.

(a) gateway (b) gradient

(c) entry node (d) terminal node

10. Each sensor in a sensor network takes ———— measurements of physical phenomena such as heat, sound, light, pressure or motion

(a) time stamped

(b) time sequenced

(c) time stamped as well as time sequenced

(d) either time stamped or time sequenced

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Write a note on infrared.

Or

(b) Explain spread spectrum.

12. (a) Write any five applications of WSNs.

Or

(b) Define about 3G-MSC.

13. (a) Describe about flooding in WSN.

Or

(b) How will you explain SPIN?

14. (a) Write a note on Mate.

Or

(b) Provide the three components of SesOS.

15. (a) Discuss about Home Control application for WSN.

Or

(b) What do you mean by field sampling?

Part C (5 × 8 = 40)

Answer any **five** questions.

16. With a neat diagram. explain in detail the IEEE802.11 system architecture.

17. Describe in detail the spectrum allocation for WiMAX.

18. In what way do MANETs and WSNs differ?

19. Write a detailed note on firewall.

20. Describe the routing challenges in wireless sensor networks.

21. Elucidate the data aggregation operations in detail.

22. Elaborate on the programming in TinyOS using NesC.

23. Bring out a detailed study on Nanoscopic Sensor Applications.

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R8452	Sub. Code
	551505

M.Sc. DEGREE EXAMINATION, APRIL – 2023

Second Semester

Computer Science

Elective II – CLOUD COMPUTING

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

Answer **all** questions.

1. Which of the following is a type of cloud computing service?

   (a) Service-as-a-Software (SaaS)

   (b) Software-and-a-Server (SaaS)

   (c) Software-as-a-Service (SaaS)

   (d) Software-as-a-Server (SaaS)

2. Cloud computing is a kind of abstraction which is based on the notion of combining physical resources and represents them as _____ resources to users.

   (a) Real (b) Cloud

   (c) Virtual (d) None of the mentioned

3. Which one of the following cloud concepts is related to sharing and pooling the resources?

   (a) Polymorphism (b) Virtualization

   (c) Abstraction (d) None of the mentioned

4. Out of these, which one is the most restrictive and refined service model?

(a) SaaS (b) IaaS

(c) CaaS (d) PaaS

5. _____ as a Service is a cloud computing infrastructure that creates a development environment upon which applications may be build.

(a) Platform (b) Infrastructure

(c) Service (d) None

6. Which of the following storage is presented to a user as if it is a ready-to use disk drive?

(a) Unavailable (b) Unreliable

(c) Managed (d) Unmanaged

7. The Microsoft _____ Platform ROI wizard provides a quick and dirty analysis of your TCO for a cloud deployment on Windows Azure in an attractive report format.

(a) Azure (b) AWS

(c) EC2 (d) All of the mentioned

8. Which of the following is a third-party VPN based on Google's Google Talk?

(a) Anchor Free Hotspot Shield

(b) Hotspot VPN

(c) Gbridge

(d) All of the mentioned

9. The characteristic of something having been provided by an authorized source in the context of security is known as.

(a) Integrity (b) Authenticity

(c) Availability (d) Consistency

10. Which of the following Cloud Security Characteristic states that data not having been altered by an unauthorized party?

(a) Authenticity (b) Availability

(c) Confidentiality (d) Integrity

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Discuss the characteristics and benefits of cloud computing.

Or

(b) Summarize the challenges still open in Cloud computing.

12. (a) What are the characteristics in virtualization environment?

Or

(b) Explain in detail about Storage services in Cloud computing.

13. (a) Briefly summarize cloud component model.

Or

(b) Discuss about reliability and availability of design cloud environment.

14. (a) Briefly summarize about Google Cloud SQL.

Or

(b) Write a brief note on packages in python.

15. (a) Write a brief note on Single Sign-on(SSO).

Or

(b) Discuss in detail about K-means clustering.

Part C $(5 \times 8 = 40)$

Answer any **five** questions.

16. Explain in detail about Cloud Computing reference model.

17. Elaborate the procedure to built cloud computing environment.

18. Explain in detail about the architecture of Hyper-V.

19. Describe in detail about community cloud.

20. Illustrate the architecture of service oriented cloud computing.

21. Illustrate the control structures used in python.

22. Write a detail note on python for windows Azure.

23. Explain in detail about Naive Bayes classification.

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