SE-158

Seat No.	

Total No. of Pages : 2

T.Y. B.Tech. (Computer Science and Engineering) (Part - III) (CBCS) (Semester - VI) (New) Examination, March - 2023

COMPILER CONSTRUCTION

Sub. Code : 81546

Day and Date : Friday, 23 - 06 - 2023 **Total Marks : 70**

Time : 10.30 a.m. to 01.00 p.m.

Instructions : 1) **All questions are compulsory.**
2) **Assume suitable data wherever necessary.**

Q1) Solve MCQs. [7×2=14]

a) Optimizing Compiler _____.
   i) Optimized to occupy less space
   ii) Optimize the code
   iii) Take less time to execute
   iv) None of these

b) The linker _____.
   i) is similar to interpreter
   ii) uses source code as its input
   iii) is required to create a load module
   iv) none of these

c) Which of the following is not a token of C program?
   i) 102 ii) #define
   iii) MAX iv) 123.33

d) A bottom up parser generates _____.
   i) Right most derivations
   ii) Right most derivations in reverse
   iii) Left most derivations
   iv) Left most derivations in reverse

e) _____ is a top-down parser.
   i) Operator precedence parser ii) An LALR (k) parser
   iii) An LR (k) parser iv) Recursive descent parser

P.T.O.

f) The output of a code generator is a _____.

i) syntax tree ii) target program

iii) parse tree iv) source program

g) The quality of generated code is determined by its _____.

i) behavior and size ii) behavior and speed

iii) speed and size iv) behavior only

Q2) Solve any two of the following. **[2×7=14]**

a) Explain different compiler construction tools.

b) Explain Lex specification.

c) Explain LL (1) parsing algorithm.

Q3) Solve any two of the following. **[2×7=14]**

a) Explain translation of a statement using 6 phases of compiler.

b) What are tokens? Explain specification and recognition of tokens.

c) What is top down parsing? Explain with example.

Q4) Solve any two of the following. **[2×7=14]**

a) What is S attributed definition and L attributed definition? Explain with examples.

b) What are basic blocks?

c) What are issues in design of a code generator?

Q5) Solve any two of the following. **[2×7=14]**

a) Write Syntax Directed Translation Scheme for Assignment Statements.

b) What is peephole optimization?

c) Construct DAG (Directed Acyclic Graph) for following Expression ((a*b)+(a*b))+((c*d)+(c*d))

SE-205

Seat No.	

Total No. of Pages : 3

T.Y. B.Tech. (Computer Science and Engineering) (Part - III) (CBCS) (Semester - VI) Examination, March - 2023

OPERATING SYSTEM - II

Sub. Code : 81547

Day and Date : Tuesday, 27 - 06 - 2023 **Total Marks : 70**

Time : 10.30 a.m. to 01.00 p.m.

Instructions : 1) **All questions are compulsory.**
2) **Figure to the right indicate full marks.**
3) **Assume suitable data wherever necessary.**

Q1) Solve MCQs. [7×2=14]

i) Pool of internal data buffers are called as _____.
   a) Memory b) Free list
   c) Buffer Cache d) Pool

ii) The kernel must write buffer contents to disk before reassigning the buffer this condition is called as _____.
   a) write b) delayed write
   c) read d) append

iii) 'ialloc' assigns _____ to a newly created file.
   a) disk inode b) disk block
   c) byte offset d) none of the above

iv) Processes can use _____ system call to position the I/O and allow random access to the file.
   a) read b) creat
   c) mknod d) lseek

v) Every memory location of a page is addressed by :
   a) (Virtual page number, logical page number) pair
   b) Virtual page number
   c) (Virtual page number, byte offset in page) pair
   d) (Page number, byte offset in page) pair

P.T.O.

vi) The scheduler of UNIX belongs to general class of operating system schedulers known as _____.

a) Round robin

b) Multilevel round robin

c) Round robin with multilevel feedback

d) Round robin feedback

vii) _____ have the same function as other drivers to control the transmission of data to and from terminals.

a) terminal driver b) disk driver

c) device driver d) stream

Q2) Solve any two of the following. **[2×7=14]**

a) Draw and explain block diagram of UNIX kernel.

b) Explain the algorithm for conversion of pathname to Inode.

c) Draw and explain the file system data structures for each statement when processes (A/B) executes following system calls:

Process A:

fd1=open("/etc/passwd",O_RDONLY);

fd2=open("local",O_RDWR);

fd3=open("/etc/passwd",O_WRONLY);

Process B:

fd1=open("/etc/passwd",O_RDONLY);

fd2=open("private",O_RDONLY);

Q3) Solve any two of the following. **[2×7=14]**

a) Explain the advantages and disadvantages of buffer cache.

b) What is Inode? Summarize the fields from disk inode?

c) Let us assume disk block contains 1024 bytes and there are 10 direct blocks, 1 single indirect block, 1, double indirect block, 1 triple indirect block. Find the maximum size of the file of a file's table of content. Write your own assumptions if any.

Q4) Solve any two of the following. **[2×7=14]**

a) With the help of state transition diagram, explain the life cycle of process?

b) What is the use of fork system call? Explain the sequence of operations kernel executes for fork.

c) What is demand paging? Explain data structure used for demand paging?

Q5) Solve any two of the following. **[2×7=14]**

a) What is region? Describe algorithm for allocate region?

b) Explain system calls for time?

c) Explain different functions of clock interrupt handler.

SE-221

Seat No.	

Total No. of Pages : 4

T.Y. B.Tech. (Computer Science and Engineering) (Part-III) (CBCS) (Semester-V) Examination, March - 2023

INTERNET OF THINGS

Sub. Code : 80923

Day and Date : Friday, 30 - 06 - 2023 **Total Marks : 70**

Time : 02.30 p.m. to 05.00 p.m.

Instructions : 1) All questions are compulsory.

2) Figures to the right indicate full marks.

3) Assume suitable data wherever necessary.

Q1) Solve MCQs. **[14×1=14]**

a) ITU view of ubiquitous networking contains

i) anywhere connectivity ii) anytime connectivity

iii) anything connectivity iv) all of the above

b) What is Internet of Things?

i) It is the inter-networking of physical devices embedded with electronics, software, sensors, actuators and network connectivity that enable these objects to collect and exchange data

ii) It is protocol to access internet

iii) It set of services used to access internet

iv) None of above

c) Temperature sensors installed in a server room transfers the temperature data to the server for controlling air conditioners automatically. This the example of _____.

i) H2H ii) M2M

iii) MiH iv) M2H

P.T.O

d) Which of the following is correct sentence

i) Object Name Service (ONS) is a mechanism that leverages Domain Name System (DNS) to discover information about a product and related services from the Electronic Product Code (EPC).

ii) Object name service (ONS) will also be important in the IoT to map the "thing-friendly" names of object which may belong to heterogeneous name spaces

iii) Both (i) and (ii)

iv) None of above

e) _____ are the machine to machine communication applications.

i) Environment monitoring ii) Smart meters

iii) Supply chain management iv) All of the above

f) Which of following is a structural aspect of IoT?

i) Traffic characteristic ii) Scalability

iii) Interoperability iv) All of the above

g) The sensor nodes are _____.

i) Typically small in size ii) Consumes less power

iii) Cost is low iv) All of the above

h) The energy source used in WSN (Node) are _____.

i) Battery ii) Inverter

iii) Capacitor iv) None of the above

i) Where raspberry pi can use?

i) Home automation and security systems

ii) Media center

iii) HD surveillance camera

iv) All of the above

j) Raspbian is _____.

i) Assembler ii) Language

iii) Compiler iv) OS

k) Which of the following is not a characteristic of ZigBee network.

i) low-power consumption ii) easy installation

iii) high data rate iv) unlicensed radio bands

l) Bluetooth is _____.

i) short-range data exchange communication protocol

ii) long-range data exchange communication protocol

iii) communication protocol

iv) wireless protocol

m) Personal wellness monitoring includes.

i) Senior activity monitoring scenario

ii) Safety monitoring scenario

iii) Both (i) and (ii)

iv) None of these

n) Activity sensors include

i) pavement/roadway pressure

ii) vehicle and pedestrian detection

iii) parking space occupancy

iv) All of these

Q2) Solve any two of the following. **[2×7=14]**

a) Explain Identification Technology in IoT.

b) What is EPC? How EPC is used in RFID/sensor?

c) Explain the networking nodes in details.

Q3) Solve any two of the following. **[2×7=14]**

a) Draw and explain object classification diagram.

b) Draw a neat diagram RFID reader and explain its operation?

c) Explain in brief Wireless node or Mote in WSN.

Q4) Solve any two of the following. **[2×7=14]**

a) How is Raspberry Pi used in IoT? Explain with example.

b) Explain in detail Cellular and Mobile Network Technologies.

c) Draw a neat Diagram of Advanced metering Infrastructure and explain its operations.

Q5) Solve any two of the following. **[2×7=14]**

a) What is Raspbian? Explain the hardware and software components of Raspberry Pi?

b) Explain NFC Technology in detail and why it is used in IoT?

c) How IoT is useful for development of Smart City?

Total No. of Pages : 3

Seat No.	

T.Y. B.Tech. (Computer Science and Engineering) (Part - III) (CBCS) (Semester - V) Examination, March - 2023

COMPUTER ALGORITHM

Sub. Code : 80797

Day and Date : Tuesday, 27 - 06 - 2023 **Total Marks : 70**

Time : 02.30 p.m. to 05.00 p.m.

Instructions : 1) **All Questions are compulsory.**
2) **Figures to the right indicate full marks.**
3) **Assume suitable data wherever necessary.**

Q1) Solve MCQs. [7×2=14]

i) Suppose we modify the above function foo() and store the values of foo(i), 0 <= i < n, as and when they are computed. With this modification, the time complexity for function foo() is significantly reduced. The space complexity of the modified function would be:

a) O(1) b) O(n)

c) O(n!) d) $O(n^n)$

ii) Which of the following is true about Kruskal and Prim MST algorithm? Assume that Prim is implemented for adjacency list representation using Binary Heap and Kruskal is implemented using union by rank.

a) Worst case time complexity of both algorithms is same

b) Worst case time complexity of Kruskal is better than Prim

c) Worst case time complexity of Prim is better than Kruskal

d) None

iii) We use dynamic programming approach when

a) We need an optimal solution

b) The solution has optimal substructure

c) The given problem can be reduced to the 3-SAT problem

d) It's faster than Greedy

P.T.O.

iv) The inorder and preorder traversal of a binary tree are d b e a f c g and a b d e c f g, respectively. The postorder traversal of the binary tree is:

a) d e b f g c a
b) e d b g f c a
c) e d b f g c a
d) d e f g b c a

v) Let S be an NP-complete problem and Q and R be two other problems not known to be in NP. Q is polynomial time reducible to S and S is polynomial-time reducible to R. Which one of the following statement is true?

a) R is NP-complete
b) R is NP-hard
c) Q is NP-complete
d) Q is NP-hard

vi) Which is not a constraints enforced on PRAM model.

a) EREW
b) ERCW
c) CRCW
d) None

vii) Running time of quick sort depends on selection of

a) No of inputs
b) Size of elements
c) Arrangements of elements in array
d) Pivot element

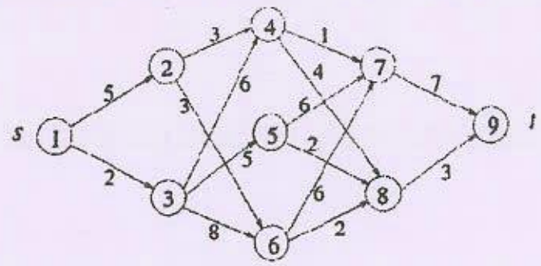
Q2) Solve any two of the following. **[2×7=14]**

a) Explain with example Big-oh, Big-omega and Theta, Also plot a graph for few functions.
b) What is difference between priori and posteriori analysis.
c) Generate the sets S^i, $0 \le i \le 4$, when $(w_1, w_2, w_3, w_4) = (10, 15, 9)$ and $(p_1, p_2, p_3, p_4) = (2, 5, 8, 1)$.

Q3) Solve any two of the following. **[2×7=14]**

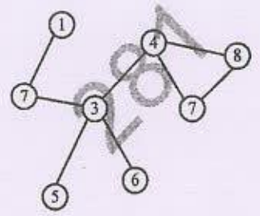
a) Solve job sequencing problem with deadlines using greedy approach for following instance $n = 7$. $(p_1, p_2, ..., p_7) = (50, 15, 18, 16, 8, 25, 60)$. $(d_1, d_2, ..., d_7) = (1, 3, 4, 3, 2, 1, 2)$
b) Compare Prim's and Kruskal's algorithm to find Minimum cost Spanning Tree (MST).

c) Find minimum cost path from s to t in multistage graph given below.



Q4) Solve any two of the following. **[2×7=14]**

a) Write a note on :
   i) AND/OR graph
   ii) Game tree
b) Define articulation point and biconnected component with suitable example. Identify articulation points using DFS Spanning Tree in following graph.



c) List and explain Variants of PRAM.

Q5) Solve any two of the following. **[2×7=14]**

a) Discuss Algorithm and conditions of 8 Queens problem.
b) Explain the relationship between P, NP, NP-Complete, NP-Hard problems with neat diagram.
c) Explain with example embedding of binary tree into hypercube.

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Total No. of Pages : 3

Seat No.	

T.Y. B.Tech. (Computer Science and Engineering) (Part - III) (CBCS) (Semester - V) Examination, March - 2023

OBJECT ORIENTED MODELING AND DESIGN

Sub. Code : 80796

Day and Date : Monday, 26 - 06 - 2023 **Total Marks : 70**

Time : 02.30 p.m. to 05.00 p.m.

Instructions : 1) **All Questions are compulsory.**
2) **Assume suitable data wherever necessary.**
3) **Figures to the right indicate full marks.**

Q1) Solve MCQs. **[14×1=14]**

i) _____ is the selective examination of certain aspects of a problem.
a) visualization b) communication
c) abstraction d) reduction

ii) _____ consists of separating the external aspects of an object, which are accessible to other objects from the internal implementation details.
a) inheritance b) abstraction
c) polymorphism d) encapsulation

iii) Generalization is sometime called as _____ relationship.
a) and b) part of
c) is-a d) none of these

iv) A system can best be understood by first examining its _____ structure.
a) dynamic b) static
c) logical d) none of these

v) An event is a _____ transmission of information from one object to another.
a) two-way b) one-way
c) one to many d) none of these

P.T.O.

vi) A _____ is a sequence of events that occurs during one particular execution of a system.

a) state diagram b) information transfer
c) scenario d) sequence diagram

vii) Interface can be separated into application logic and the _____ interface.

a) state b) object
c) user d) none of these

viii) The decomposition of system into _____ may be organized as a sequence of horizontal layers or vertical partitions.

a) modules b) groups
c) subsystem d) sheet

ix) Which are following grouping things.

a) Notes b) State
c) Packages d) Classes

x) Stereotypes means _____.

a) Extends vocabulary of UML
b) To mention class name
c) To represent relationships
d) To add role names

xi) Scenarios are :

a) the same as use cases
b) the same as test cases
c) used to derive test cases
d) the same as object diagrams

xii) An _____ is atomic, meaning that it cannot be interrupted by an event and therefore runs to completion.

a) Action b) Activity
c) Process d) None of the above

xiii) Stereotype that can be applied to component is

a) Executable b) Library
c) Table d) All of the above

xiv) A _____ is a physical element that exists at run time and represents a computational resource.

a) component b) node
c) class d) none of these

Q2) Solve any two of the following. **[2×7=14]**

a) Explain different Object-Oriented Themes.
b) Explain the following elements of data flow diagrams :
   i) Processes
   ii) Data Flows
   iii) Actors
c) Explain the impact of an object-oriented approach.

Q3) Solve any two of the following. **[2×7=14]**

a) What is class and object? Explain with appropriate example.
b) Write note on Scenarios and event traces.
c) Explain in detail the actions taken by designer in design optimization.

Q4) Solve any two of the following. **[2×7=14]**

a) Explain extensibility mechanisms in UML.
b) Draw and explain use case diagram for credit card validation system.
c) Explain relationship between a component and its interfaces.

Q5) Solve any two of the following. **[2×7=14]**

a) Explain the grouping and annotational thing in UML.
b) Explain the relationship between use cases and collaborations.
c) Explain the relationship between a node and the components.

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Total No. of Pages : 3

Seat No.	

T.Y. B.Tech. (Computer Science and Engineering) (Part - III) (CBCS) (Semester - V) Examination, March - 2023

SYSTEM PROGRAMMING

Sub. Code : 80795

Day and Date : Saturday, 24 - 06 - 2023 **Total Marks : 70**

Time : 02.30 p.m. to 05.00 p.m.

Instructions : 1) **All questions are compulsory.**
2) **Figures to the right indicate full marks.**
3) **Assume suitable data, wherever necessary.**

Q1) Solve MCQs. **[7×2=14]**

a) Execution Gap is gap between ____ and _____.
   i) Application Domain and Execution Domain
   ii) Application Domain and PL Domain
   iii) PL Domain and Execution Domain
   iv) PL Domain and CL Domain

b) MOVEM is a _____ statement.
   i) Declaration
   ii) Imperative
   iii) Assembler Directives
   iv) Advanced Assembler Directives

c) MACRO is Enclosed between
   i) START and END statement
   ii) MACRO HEADER and MACRO END Statement
   iii) MOVER and MOVEM
   iv) None of these

P.T.O.

d) MS-OFFICE is example for____ editor.
   i) Word Processor
   ii) Line editor
   iii) Stream editor
   iv) None of the above

e) Example for Non-Re-Locatable programs is/are _____.
   i) All the object modules
   ii) All the high level language programs
   iii) Hand-Coded Machine instructions
   iv) All of the above

f) If Link origin = Load origin then Loader _____
   i) Performs relocation and loads the program into main memory
   ii) Performs relocation but do not loads the program into main memory
   iii) Do not performs relocation but loads the program into main memory
   iv) None of these

g) TOS = ARB-1
   ARB = ARB*
   Above Actions are used
   i) To Access Non local variables
   ii) During Block entry into the Stack
   iii) During Block exit from the stack
   iv) All of the above

Q2) Solve any two of the following. [2×7=14]

a) Explain Fundamentals of language Processing.
b) Discuss classification of grammars.
c) Which are the advanced macro facilities for alteration of flow of control during macro expansion? Explain with example.

Q3) Solve any two of the following. [2×7=14]

a) Explain two models of program execution.
b) What is TII? Explain its uses with example.
c) Discuss Expansion time variables and attributes of formal parameter.

Q4) Solve any two of the following. [2×7=14]

a) Explain Quadruples with an example.
b) Write an Algorithm of Program Relocation.
c) What is Editor? Explain Structure of Editor with suitable Diagram.

Q5) Solve any two of the following. [2×7=14]

a) Explain pure and impure interpreters.
b) What is linking for Overlays? Explain with example.
c) Explain Types of editors with an example for each editor.

Q3) Solve any two of the following. **[7 Each]**

a) List the types of database languages. Explain each type with appropriate example.

b) Explain the rules for reduction of following notation in ERD, with appropriate examples.
   i) Weak Entity test
   ii) Multivalued attribute in Strong Entity test
   iii) Many to One relationship set.

c) List and explain the different DML statements in SQL.

Q4) Solve any two of the following. **[7 Each]**

a) Explain how Variable Length records are Represented in file.

b)

lock-x (*B*) read (*B*) *B* := *B* - 50 write (*B*)	
	lock-s (*A*) read (*A*) lock-s (*B*)
lock-x (*A*)	

Consider the above partial schedule. Check if the schedule is following the rules of 2PL. Also predict the state of execution of the given schedule.

c) Explain Shadow paging in detail.

Q5) Solve any two of the following. **[7 Each]**

a) Define the terms Dense Index and Sparse Index. Differentiate between them on basis of the Evaluation Criteria for indices.

b) What is transaction? Explain its ACID properties of transaction.

c) -

(a)	(b)	(c)
<T_0 start>	<T_0start>	<T_0 start>
<T_0, *A*, 1000, 950>	<T_0, *A*, 1000, 950>	<T_0, *A*, 1000, 950>
<T_0, *B*, 2000, 2050>	<T_0, *B*, 2000, 2050>	<T_0, *B*, 2000, 2050>
	<T_0 commit>	<T_0 commit>
	<T_1 start>	<T_1 start>
	<T_1, C, 700, 600>	<T_1, C, 700, 600>
		<T_1 commit>

Elaborate the Recovery actions given the log as it appears at three instances of time.

Total No. of Pages : 4

Seat No.	

T.Y. B.Tech. (Computer Science and Engineering) (CBCS)
(Part-II) (Semester - VI) Examination, March - 2023
DATABASE ENGINEERING
Sub. Code : 81548

Day and Date : Sunday, 02 - 07 - 2023 **Total Marks : 70**

Time : 10.30 a.m. to 01.00 p.m.

Instructions : **1)** **All Questions are compulsory.**
2) **Assume suitable data wherever necessary.**
3) **Figures to the right indicate full marks.**

Q1) Solve MCQs. **[2 Each]**

i) Which of the following is a fundamental operation in relational algebra?

(a) Set intersection
(b) Natural join
(c) Assignment
(d) None of the mentioned

ii) Which fundamental dependency types is/are not present in the following dependencies?

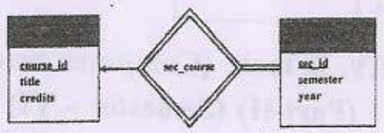
Empno -> EName, Salary, Deptno, DName

DeptNo -> DName

EmpNo. -> DName

(a) Full functional dependency
(b) Partial functional dependency
(c) Transitive functional dependency
(d) Both (b) and (c)

iii) Consider the following ERD



Which of the following is the correct reduction of the given ERD.

(a) course(course id, title, credits), section(sec id, semester, year)

(b) course (course id, title, credits), section(course id, sec id, semester, year)

(c) course(course id, title, credits), section (course id, sec_id, semester, year), sec_course(course id, sec id)

(d) course (course id, title, credits), section (course id, sec_id, semester, year), sec_course(course id, sec id, semester, year)

iv) Aggregate functions are functions that take a _____ as input and return a single value.

(a) Collection of values (b) Single value

(c) Aggregate value (d) Both (a) and (b)

v) The file organization that provides very fast access to any arbitrary record of a file is

(a) Ordered file (b) Unordered file

(c) Hashed file (d) B+ - tree

vi) A transaction is in _____ state after the final statement has been executed

(a) Active (b) Partially Committed

(c) Committed (d) None of the above

vii) In shadow paging, which of the page tables contains the modifications done by the active transaction?

(a) Current Page Table

(b) Shadow Page Table

(c) Both

(d) None

Q2) Solve any two of the following. **[7 Each]**

a) Define and differentiate between Super Key, Candidate Key and Primary Key. Give appropriate example.

b) Consider the following DB Schema and respective FD's for each relation in schema,

Client (clientNo, cName)

fdl: clientNo →cName

PropertyOwner(propertyNo, pAddress, rent, ownerNo, oName)

fd1: propertyNo → pAddress, rent, ownerNo. oName

fd2: ownerNo → oName

Rental (clientNo, property No, rentStart, rentFinish)

fd1: clientNo, propertyNo → rentStart, rentFinish

fd2: clientNo, rentStart → propertyNo, rentFinish

fd3: propertyNo, rentStart → clientNo, rentFinish

Predict the highest normal form of the given schema. Normalize the above schema till BCNF.

c) Consider the following Database design

Customer (cid, custname, custstreet, custcity)

Account (accno, branchname, balance)

Loan (loanno, branchname, amount)

Borrower (cid, loanno)

Branch (branchname, branchcity, asset)

Depositor (cid, accno)

Solve the following queries in SQL.

i) Display the name of customers who have both account and loan at the bank. **[2]**

ii) Update amount of loan to 10000 where loan number is "L-101". **[1]**

iii) Find the accno. custname and balance for customers who live in city that has "pur" as substring. **[2]**

iv) Find all customers who an account but no loan at bank. **[2]**

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Total No. of Pages : 3

Seat No.	

T.Y. B.Tech. (Computer Science and Engineering) (Part - III) (CBCS) (Semester - VI) Examination, March - 2023

MACHINE LEARNING

Sub. Code : 81549

Day and Date : Saturday, 01 - 07 - 2023 **Total Marks : 70**

Time : 10.30 a.m. to 01.00 p.m.

Instructions : 1) **All questions are compulsory.**
2) **Assume suitable data wherever necessary.**
3) **Figures to the right indicate full marks.**

Q1) Solve MCQs. **[14]**

i) Cleaning of Data is done in _____.

a) Data Collection

b) Data Preparation

c) Data Splitting

d) Data Testing.

ii) What might be the best complexity of the curve which can be utilized for isolating the two classes displayed in the picture down?

a) Linear

b) Quadratic

c) Cubic

d) Insufficient data to draw conclusion

P.T.O.

iii) Which of following are categorical features?

a) Height of a person b) Price of petroleum

c) Mother tongue of a person d) Amount of rainfall in a day

iv) _____ gives the rate of speed where the gradient moves during gradient descent.

a) Learning rate b) Cost Function

c) Hypothesis Function d) None of above

v) _____ is the randomness in data and metric to use impurity.

a) Information Gain b) Gini Index

c) Variance d) Entropy

vi) Which is not an advantage of SVM?

a) High Memory management

b) Handles nonlinear data efficiently

c) Capable of handling outliers.

d) Handles high dimensional space.

vii) Neural networks can be used in different fields. Such as _____.

a) Classification b) Data processing

c) Compression d) All of the above

Q2) Solve any two of the following. [2×7=14]

a) Explain performance measures for machine learning.

b) Explain simple regression in matrix form.

c) What is over fitting and Under fitting?

Q3) Solve any two of the following. [2×7=14]

a) Draw and explain machine learning architecture.

b) Explain simple linear regression.

c) Explain Bayesian Network.

Q4) Solve any two of the following. [2×7=14]

a) What is information gain and entropy in decision tree?

b) Explain Elbow Method in K Means clustering.

c) Explain Multiclass classification with neural network.

Q5) Solve any two of the following. [2×7=14]

a) Explain Hyperplane and Support Vectors in the SVM algorithm.

b) Explain Association Rule mining.

c) Which are applications of neural networks?

Q5) Solve any 2 of the following. **[7 Each]**

a) Explain procedure for getting back deleted files.

b) Explain roles of international laws.

c) Explain the following.

i) Snort

ii) Honeypot

iii) Intrusion Deterrence

iv) Intrusion Deflection

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T.Y. B.Tech. (Computer Science and Engineering) (CBCS) (Part-II) (Semester - VI) Examination, March - 2023

OEC-CYBER SECURITY

Sub. Code : 81551

Day and Date : Wednesday, 05 - 07 - 2023 **Total Marks : 70**

Time : 10.30 a.m. to 01.00 p.m.

Instructions : **1) All Questions are compulsory.**

2) Assume suitable data wherever necessary.

3) Figures to the right indicate full marks.

Q1) Solve MCQs. **[1 Each]**

i) What is Cyber Security?

(a) Cyber Security provides security against malware

(b) Cyber Security provides security against cyber-terrorists

(c) Cyber Security protects a system from cyber-attacks

(d) All of the mentioned

ii) Which of the following is an objective of network security?

(a) Confidentiality (b) Integrity

(c) Availability (d) All of the above

iii) Which of the following term refers to a group of hackers who are both white and black hat?

(a) Yellow Hat hackers

(b) Grey Hat hackers

(c) Red Hat Hackers

(d) White-Black Hat Hackers

iv) What is the basic mechanism behind a DoS attack?

(a) Computers don't handle TCP packets well.

(b) Computers can only handle a finite load.

(c) Computers cannot handle large volumes of TCP traffic.

(d) Computers cannot handle large loads

P.T.O.

v) What is spyware?
(a) Any software that monitors your system
(b) Only software that logs keystrokes
(c) Any software used to gather intelligence
(d) Only software that monitors what websites you visit

vi) A computer _____ is a malicious code which self-replicates by copying itself to other programs.
(a) program (b) virus
(c) application (d) worm

vii) Data _____ is used to ensure confidentiality.
(a) Encryption (b) Locking
(c) Deleting (d) Backup

viii) What is a buffer-overflow attack?
(a) Overflowing a port with too many packets
(b) Putting more email in an email system than it can hold
(c) Overflowing the system
(d) Putting more data in a buffer than it can hold

ix) SQL injection is based on what?
(a) Having database admin privileges
(b) Creating an SQL statement that is always true
(c) Creating an SQL statement that will force access
(d) Understanding web programming

x) Which of the following is an internet scam done by cyber-criminals where the user is convinced digitally to provide confidential information?
(a) MiTM attack (b) Phishing attack
(c) Website attack (d) DoS attack

xi) When IT Act 2000 came into effect?
(a) October 17, 2000 (b) October 17, 2001
(c) November 11, 2000 (d) November 11, 2001

xii) In a computer forensics investigation, what describes the route that evidence takes from the time you find it until the case is closed or goes to court?
(a) Rules of evidence (b) Law of probability
(c) Chain of custody (d) Policy of separation

xiii) Where does Linux store email server logs?
(a) /var/log/mail.* (b) /etc/log/mail.*
(c) /mail/log/mail.* (d) /server/log/mail.*

xiv) Which of the following is a vulnerability scanner specifically for Windows systems?
(a) Nmap (b) OphCrack
(c) Nessus (d) MBSA

Q2) Solve any 2 of the following. **[7 Each]**
a) Explain the following terms related to Cyber Security.
i) Hacker Slang
ii) Script Kiddies
iii) Phreaking
b) Explain concept of Cyber Stalking in detail with example.
c) Explain Passive and Active Scanning Technique.

Q3) Solve any 2 of the following. **[7 Each]**
a) Explain OSI Reference model in detail.
b) What is malware? Explain in detail.
c) Explain DDos with example.

Q4) Solve any 2 of the following. **[7 Each]**
a) What is firewall? Explain types of firewalls.
b) Explain the objectives of IT Act.
c) What is digital signature? How it works?