



DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF MANAGEMENT & INFORMATION SCIENCE
MCA SEMESTER II – Final Examination
SUBJECT: Operating System and Linux Programming (MCA-201)

Date : 16-05-2022
Time : 10.00 am to 1.00 pm

Seat No : _____
Max. Marks : 60

INSTRUCTIONS:

1. Answer each section in separate answer book.
2. Figures to the right indicate maximum marks for a respective question.
3. Assume suitable data, if required & mention them clearly.
4. Answers without justification for true/false questions lead to zero marks.
5. Draw neat sketches wherever necessary.

SECTION- I

Q-1 Do as Directed.

[10]

1. A process is _____.
(a) a program in execution (b) an instance of a program running on a computer
(c) an entity that can be assigned to and executed on a processor
(d) all (a), (b) and (c) (e) none of these
2. Which of the following decides which process can have the next time slot?
(a) dispatcher (b) kernel (c) BIOS (d) all of these
3. _____ refers to the ability of an OS to support multiple, concurrent paths of execution within a single process.
(a) multitasking (b) multiprocessing (c) multithreading (d) none of these
4. In multithreaded process model, the user stack is _____ for each thread.
(a) common (b) separate (c) none of these
5. In multithreaded process model, the user address space is _____ for each thread.
(a) common (b) separate (c) none of these
6. Which of the following is not a valid reason for process termination?
(a) Time limit exceeded (b) Memory unavailable (c) Bounds validation
(d) all (a), (b) and (c) (e) none of these
7. Normally, a user process can access the _____ of the operating system.
(a) data (b) program (c) both (a) and (b) (d) none of these
8. There is no internal fragmentation in _____ partitioning.
(a) fixed (b) dynamic (c) both (a) and (b) (d) none of these
9. In simple segmentation technique, a process is loaded by loading all of its segments into _____.
(a) fixed partitions that need not be contiguous. (b) dynamic partitions that need not be contiguous.
(c) fixed partitions that need to be contiguous. (d) dynamic partitions that need to be contiguous.
10. Typically, when a new process is spawned, a thread for that process is also spawned.
(a) True (b) False

Q-2 Attempt Any TWO Questions.

[10]

- A Explain purpose of various processor registers.
- B What is role of Banker's algorithm in operating systems? Explain the algorithm.
- C What is multithreading? Mention benefits of threads. Discuss single threaded and multithreaded process models.

Q-3 Do as Directed.

[10]

- A What is the readers-writers problem and its importance in operating systems? Write and discuss solution to the reader-writers problem where readers have priority. [6]
- B Discuss two modes of operation. [4]

OR

Q-3 Do as Directed.

[10]

- A What is significance of process control block? Explain seven state process model. [6]
- B Amongst the process scheduling algorithms FCFS and SPN, which is better? Why? Explain using suitable example. [4]

Section – II

- Q-4 Do as Directed.** [10]
- 1 In disk scheduling _____ is the time taken to locate the disk arm to a specified track where the data is to be read or write.
(a) rotational latency (b) seek time (c) average response time (d) disk access time
 - 2 In _____ file access method, information in the file is processed in order, one record after other.
(a) sequential (b) index sequential (c) index (d) direct
 - 3 _____ file system call is used to close an opened file.
(a) quit (b) exit (c) close (d) terminate
 - 4 _____ is an indicator which is used to handle and keep track on the files being accessed.
(a) Cursor (b) File access mode (c) File pointer (d) File descriptor
 - 5 In Linux OS, the command to rename a file is _____.
(a) rm (b) cd (c) cp (d) mv
 - 6 The long listing of files in directory is obtained by _____ command.
(a) ls (b) cat (c) ls -l (d) ls -d
 - 7 The _____ command in Linux OS provides detailed help for particular instruction or command.
(a) cat (b) support (c) help (d) man
 - 8 The command rmdir in Linux OS _____.
(a) removes empty directory (b) renames directory (c) recovers deleted file
(d) removes directory along with all subdirectories as well as files of directory
 - 9 Most virtual memory schemes make use of a special high-speed cache for page table entries, called _____.
(a) buddy system (b) TLB (c) paging (d) paging + segmentation
 - 10 A _____ address is a reference to a memory location independent of the current assignment of data to memory.
(a) physical (b) relative (c) logical (d) none of these

- Q-5 Attempt any Two.** [10]
- A Write a detailed note on RAID. [5]
 - B Discuss any two methods of file system organization in depth. [5]
 - C List and explain in short system calls for file management. [5]

- Q-6 Do as Directed.** [10]
- A Write a shell script for creating a calculator that accepts two numeric values and one operator for manipulation using case statement to give options for operators +, -, /, * and default case for invalid operator choice. The shell script should be in a loop so that it can continue until user decides to exit. [6]
 - B Explain following file handling commands with suitable examples: (a) rm (b) cp (c) cat (d) wc [4]

OR

- Q-6 Do as Directed.** [10]
- A What is paging? Explain simple paging technique. [6]
 - B Discuss following Linux commands with suitable examples: (a) echo (b) mkdir (c) whoami (d) ps [4]



DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF MANAGEMENT AND INFORMATION SCIENCE
SUBJECT: (MCA 202) : OBJECT ORIENTED PROGRAMMING WITH JAVA

Examination : <u>REGULAR EXTERNAL</u>	Seat No : <u>41</u>
Date : <u>17-05-2022</u>	Day : <u>TUESDAY</u>
Time : <u>10 to 1 pm</u>	Max. Marks : <u>60</u>

INSTRUCTIONS:

1. Answer each section in separate answer book.
2. Figures to the right indicate maximum marks for that question.
3. The symbols used carry their usual meanings.
4. Assume suitable data, if required & mention them clearly.
5. Draw neat sketches wherever necessary.

Section I

Q.1 Answer the following.

[10]

1. Which of the following is a superclass of every class in Java?
a. ArrayList b. Abstract class c. Object class d. String
2. What is the process of defining more than one method in a class differentiated by method signature?
a. Function doubling b. Method overriding
c. Method overloading d. None of the above
3. Which of the following is a method having same name as that of its class?
a. finalize b. delete c. constructor d. class
4. Which of this statement is incorrect?
a. All object of a class are allotted memory for the all the variables defined in the class
b. If a function is defined public it can be accessed by object of other class by inheritance
c. All object of a class are allotted memory for the methods defined in the class
d. main() method must be made public
5. Which of these method of String class is used to obtain character at specified index?
a. char() b. Charat() c. charAt() d. charat()
6. Which of the following statements are incorrect?
a. String is a class b. Strings in java are mutable
c. Every string is an object of class String
d. Java defines a peer class of String, called StringBuffer, which allows string to be altered
7. If a class inheriting an abstract class does not implement all of its method then it will be known as?
a. A simple class b. Abstract c. Static class d. All of the above
8. Which of the given methods are of Object class?
a. notify(), wait(long msec), and synchronized()
b. notify(), notifyAll(), and wait()
c. wait(long msec), interrupt(), and notifyAll()
d. sleep(long msec), wait(), and notify()
9. Given the following piece of code:

```
public class School{  
    public abstract double numberOfStudent();  
}
```

- a. The keywords public and abstract cannot be used together.
 - b. Class School must be defined abstract.
 - c. The method numberOfStudent() in class School must have a body.
 - d. You must add a return statement in method numberOfStudent().
10. The following code contains one compilation error, find it?

```
public class Test {  
    Test() { } // line 1  
    static void Test() { this(); } // line 2
```

Continue..

```

        public static void main(String[] args) { // line 3
            Test(); // line 4
        }
    }

```

- At line 1, constructor Tester must be marked public like its class
- At line 2, constructor call
- At line 3, compilation error, ambiguity problem, compiler can't determine whether a constructor
- At line 4

Q.2 Attempt any two.

[10]

- What is the difference between interface and abstract class? Explain with suitable example.
- Explain the use of abstract and final with reference to variable, method and class with example.
- Write a short note on nested class in java.

Q.3 Answer the following.

- What is inheritance? Explain types of inheritance. Also explain how can "interface" concept eliminate code duplicity problem in java which is generated due to multiple inheritance? [6]
- Differentiate between StringBuffer and StringBuilder Class. [4]

OR

Q.3 Answer the following.

- Define package. State the steps to create and import a package. Also explain how to set classpath in detail [6]
- Explain Wrapper class with appropriate example. [4]

Section II

Q.4 Answer the following.

[10]

- Which of the following exception is thrown when divided by zero statement is executed?
a. NullPointerException b. NumberFormatException
c. ArithmeticException d. None
- Identify the interface which is used to declare core methods in java?
a. Comparator b. Queue c. Collection d. Set
- Which of these keywords are used for the block to be examined for exceptions?
a. check b. throw c. try d. catch
- Which of these is a method to clear all the data present in output buffers?
a. clear() b. fflush() c. flush() d. close()
- Which of these interface extends DataOutput interface?
a. Serializable b. Externalization c. ObjectOutputStream d. ObjectInput
- Which of these package contains classes and interfaces for networking?
a. java.io b. java.net c. java.network d. java.net java.util
- Which of these classes implements Set interface?
a. ArrayList b. HashSet c. LinkedList d. DynamicList
- What will be the output of the following program code?

```

public class Test implements Runnable{
    public static void main(String[] args){
        Thread t = new Thread(this);
        t.start();
    }

    public void run(){
        System.out.println("test");
    }
}

```

- The program compiles fine, but it does not print anything because t does not invoke the run() method
- The program does not compile because this cannot be referenced in a static method.
- The program compiles and runs fine and displays test on the console.

d. None of the above

9. Analyze the following code:

```
public class Test implements Runnable{
    public static void main(String[] args){
        Test t = new Test();
    }

    public Test(){
        Thread t = new Thread(this);
        t.start();
    }

    public void run(){
        System.out.println("test");
    }
}
```

a. The program has a compilation error because t is defined in both the main() method and the constructor Test().

b. The program compiles and runs and displays test.

c. The program compiles fine, but it does not run because you cannot use the keyword this in the constructor.

d. The program compiles and runs and displays nothing.

10. What will be the output?

```
class One extends Thread{
    public void run(){
        for(int i=0; i<2; i++){
            System.out.print(i);
        }
    }
}

public class Test{
    public static void main(String args[]){
        Test t = new Test();
        t.call(new One());
    }

    public void call(One o){
        o.start();
    }
}
```

a. 0 0 b. 0 1 c. Compilation Error d. None of these

Q.5 Answer any two.

[10]

1. What is collection framework? Discuss Map interface with example.
2. Discuss BufferedWriter and the BufferedReader class of java I/O with example.
3. Discuss event delegation model.

Q.6 Answer the following.

- [A] Explain exception handling with try, catch and finally by taking suitable example. [6]
[B] Write and explain steps to connect java application with the database using JDBC. [4]

OR

Q.6 Answer the following.

- [A] Define Thread. How different way thread is created in Java? Discuss the Thread life cycle with suitable example of java program code. [6]
[B] Discuss life cycle of applet. [4]



DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF MANAGEMENT AND INFORMATION SCIENCES
MCA SEMESTER II
SUBJECT: Data Structures

Examination : REGULAR EXTERNAL
Date : 13-5-2022
Time : 10:00 to 1:00

Seat No : _____
Day : WEDNESDAY
Max. Marks : 60

INSTRUCTIONS:

1. Answer each section in separate answer book.
2. Figures to the right indicate maximum marks for that question.
3. The symbols used carry their usual meanings.
4. Assume suitable data, if required & mention them clearly.
5. Draw neat sketches wherever necessary.

SECTION - I

[10]

Q.1 Do as directed.

1. _____ data structure is required for Breadth First Traversal on a graph.
(A) Stack (B) Queue (C) Linked List (D) None of these
2. A normal queue, if implemented using an array of size MAX_SIZE, gets full when?
(A) $\text{Rear} = \text{MAX_SIZE} - 1$ (B) $\text{Front} = (\text{rear} + 1) \bmod \text{MAX_SIZE}$
(C) $\text{Front} = \text{rear} + 1$ (D) $\text{Rear} = \text{front}$
3. _____ is most suitable in situations where the data has to be stored and then retrieved in reverse order.
(A) Stack (B) Queue (C) List (D) Linked list
4. A linked list in which none of the nodes contains a NULL pointer is?
(A) Singly linked list (B) Doubly linked list
(C) Circular linked list (D) None of the above
5. What does the following function do for a given Linked List with first node as head?

```
void fun1(struct node* head)
{
    if(head == NULL)
        return;
    fun1(head->next);
    printf("%d ", head->data);
}
```


(A) Prints all nodes of linked list
(B) Prints all nodes of linked list in reverse order
(C) Prints alternate nodes of Linked list
(D) Prints alternate nodes in reverse order
6. Two main measures of the efficiency of an algorithm are
(A) Processor and memory (B) Complexity and capacity
(C) Time and space (D) Data and space
7. Select the postfix equivalent of the expression $(A / (B - C + D)) * (E - G) * C$
(A) $A \text{ BC-D+ / EG-*C*}$ (B) $A \text{ BCD+ - / EG-*C*}$
(C) $A \text{ BCD / + EG-C**}$ (D) $A \text{ BC-D+ / EG-C**}$
8. The elements of a linked list are stored
(A) In a structure (B) In an array (C) Anywhere the computer has space for them
(D) In contiguous memory locations
9. In doubly linked list, the number of pointers affected for an insertion operation will be
(A) 4 (B) 0 (C) 1
(D) Depends on the nodes of the doubly linked list (E) None of these
10. Read the following code. Identify errors if any. Write the correct output if there is no error.

```
#include <stdio.h>
int main()
{
    char str1[] = "Database";
    char str2[] = {'S', 't', 'a', 'c', 'k'};
    int n1 = sizeof(str1) / sizeof(str1[0]);
    int n2 = sizeof(str2) / sizeof(str2[0]);
    printf("n1 = %d, \n n2 = %d", n1, n2);
    return 0;
}
```

Q.2 Attempt Any TWO from the following questions.

[10]

- (A) Write a C program for following methods with reference to Queue data structure implementation.
(i) Enqueue – insert element (ii) Dequeue – delete element
- (B) Explain the evaluation of postfix expression using stack and write an algorithm to evaluate a postfix expression
- (C) What is static and dynamic memory allocation. Explain the use of malloc() function and its difference with calloc() function.

Q.3 (A) Describe function pointer with example.

[5]

- (B) Explain the concept and structure of doubly linked list. Write the algorithm for insertion in doubly linked list.

[5]

OR

Q.3 (A) List basic operations for stack data structure and write algorithm for each.

[5]

- (B) Show the tracing of following operation step by step with the status of all parameters for a circular queue of size = 6. [5]
- (i) insert 12, 13, 15 (ii) delete two element (iii) insert 98, 97, 34
 (iv) delete next two element (v) insert 9, 12, 4

SECTION - II

Q.4 Do as directed.

[10]

- Binary tree constructed with n nodes, such that each node (except leaf node) has exactly either zero or two children is called _____.
 (A) Complete Binary tree (B) Full binary tree (C) Binary search tree (D) AVL tree
- An adjacency matrix representation of a graph cannot contain information of _____.
 (A) nodes (B) edges (C) direction of edges (D) parallel edges
- The quick sort algorithm exploit _____ design technique.
 (A) Greedy (B) Dynamic programming (C) Divide and Conquer (D) Backtracking
- Inorder traversal of binary search tree will produce _____.
 (A) unsorted list. (B) sorted list. (C) reverse of input. (D) none of these.
- If a node having two children is deleted from a binary tree, it is replaced by its _____.
 (A) Inorder predecessor (B) Inorder successor
 (C) Preorder predecessor (D) Post order
- The complexity of the Linear Search algorithm is _____.
 (A) $O(n)$ (B) $O(\log n)$ (C) $O(n^2)$ (D) $O(n \log n)$
- A binary search tree whose left subtree and right subtree differ in height by almost 1 unit is called _____.
 (A) Tournament tree (B) AVL tree (C) Distinct tree (D) Forest
- Which of the following algorithms are used to find the shortest path from a source node to all other nodes in a weighted graph?
 (A) BFS (B) Dijkstra's algorithm
 (C) Prim's Algorithm (D) Kruskal's Algorithm
- Which of the following statements is true about AVL Trees?
 (A) The difference between the heights of left and right nodes can not be more than 1
 (B) The height of the AVL tree always remains of the order of $O(\log n)$
 (C) AVL trees are a type of self-balancing binary search trees
 (D) All of the above
- In _____ sort, a pivot element is taken for each iteration in consideration.
 (A) merge (B) quick (C) selection (D) heap

Q.5 Attempt **Any TWO** from the following questions.

[10]

- Illustrate stepwise sorting using the following methods for the data {0, 218, 34, 165, 712, 18, 29, 27, 4}
 (i) Insertion sort (ii) Bubble sort
- Discuss insertion and deletion of a node in Binary search tree in detail with example.
- Construct a binary tree from the given tree traversal results
 Inorder: D B E F A G H C
 Preorder: A B D E F C G H

Q.6 (A) Explain depth first search algorithm with example.

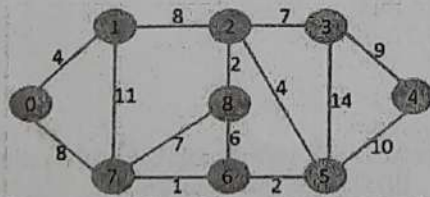
[5]

- (B) Explain LL Rotation and RR rotation in AVL tree with suitable examples.

[5]

OR

- Q.6 (A) For the following weighted graph, find minimum spanning tree using Kruskal's algorithm and calculate the cost of the minimum spanning tree. Also find the shortest path between node 1 to node 5. [5]



- (B) Write a C program for traversal in binary tree using recursion.

[5]



DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF MANAGEMENT AND INFORMATION SCIENCES
MCA SEMESTER - II
SUBJECT: [MCA-204] SOFTWARE ENGINEERING

Examination : REGULAR EXTERNAL
Date : 19/05/2022
Time : 10:00 AM To 01:00 PM

Seat No. : 18
Day : Thursday
Max. Marks : 60

INSTRUCTIONS:

1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

SECTION - I

Q.1 Do as directed.

[10]

- (i) What's the single biggest factor in enabling a Scrum Team to adapt to change quickly
(A) The ability of the Team to self-manage effectively
(B) A senior Stakeholder regularly attending the Daily Scrum
(C) The Product Owner being absent most of the time
(D) The Scrum Master deciding business value
- (ii) Which of these is NOT a purpose of the Daily Scrum
(A) To inspect progress toward the Sprint Goal
(B) To discuss the performance of a Team member
(C) To adapt the Sprint Backlog as necessary
(D) To adjust the upcoming planned work
- (iii) Velocity in an Agile software development approach is defined as:
(A) It is an effort estimation technique defined in the Scrum framework.
(B) It is a key metric to measure the progress of the sprint and determine the efficiency of the scrum team.
(C) It is a methodology for implementing the Scrum framework.
(D) None of the mentioned
- (iv) A product backlog in an Agile project is _____
(A) a collection of all the implemented business requirements.
(B) a collection of all the active sprints.
(C) a collection of all the outstanding requirements in the form of user stories, tasks, bugs.
(D) None of the mentioned
- (v) Which of the following is golden rule for interface design?
(A) Place the user in control (B) Reduce the user's memory load
(C) Make the interface consistent (D) All of the mentioned
- (vi) consistency improves an existing program's source code while preserving its external behavior.
- (vii) TDD stands for Test driven development.
- (viii) A new story can be introduced in an active sprint. [State True/ False]
- (xi) To apply design patterns well, what you need to understand is only what problems they solve and the implementation structure needed for the pattern solution. [State True/ False]
- (x) It is possible to prevent user errors with superior interface design, instead of simply providing error messages when they make a mistake. [State True/ False]

Q.2 Attempt any Two from the following questions.

[10]

- (i) List and Explain various design issues in view of user interface design.
- (ii) List and Discuss various phases in Agile Requirement Generation Model with the help of an example.
- (iii) Distinguish between
(A) Verification and Validation
(B) Quality Assurance and Quality Control

Q.3 Attempt the following questions.

[10]

- (i) Discuss the Extreme Programming process in detail.
- (ii) Define various testing quadrants in agile. How this quadrants are separated? Discuss the quadrants helping the development team in detail.

OR

Q.3 Attempt the following questions.

[10]

- (i) List and Explain various metrics used in measuring software reliability.
- (ii) Explain Dynamic Systems Development Method in detail.

SECTION - II

Q.4 Do as directed.

[10]

- (i) The worst type of coupling is _____.
(A) Data coupling (B) Control coupling (C) Stamp coupling (D) Content coupling
- (ii) The problem that threatens the success of a project but which has not yet happened is known as a _____.
(A) Bug (B) Error (C) Risk (D) None of the mentioned
- (iii) In the spiral model 'risk analysis' is performed _____.
(A) In first loop (B) In last loop (C) In every loop (D) Before starting any loop
- (iv) _____ is a promising approach to create reusable components.
(A) Component searching (B) Domain analysis
(C) Component creation (D) None of the mentioned
- (v) Modules X and Y operate on the same input and output data, then the cohesion is _____.
(A) Sequential (B) Communicational (C) Procedural (D) Logical
- (vi) Which lifecycle model would you use for developing a commercial videogame that requires about 8 months of effort from a team of 6 people?
(A) V-Model (B) Waterfall (C) Incremental (D) None of the mentioned
- (vii) The below stated requirement is a _____ type of requirement.
"The class roster system should be able to print out a list of the students in the class, including name, id number and major information, putting 25 names on each page."
(A) Functional (B) Non Functional (C) Business (D) None of the mentioned
- (viii) _____ is a software development activity that is not a part of software processes.
(A) Validation (B) Specification (C) Development (D) Dependence
- (xi) Requirements should specify 'how' but not 'what'. [State True/ False]
- (x) Good quality engineering can prevent defects from happening, not merely find defects and make sure they are fixed. [State True/ False]

Q.5 Attempt any Two from the following questions.

[10]

- (i) List different types of flows for software processes. Explain each with the help of neat diagrams.
- (ii) Define Requirement Engineering in traditional software development. Discuss the steps required to establish the groundwork for understanding of software requirements.
- (iii) Discuss Cohesion and Coupling in view of design concepts. Explain how they relate in achieving Functional Independence

Q.6 Attempt the following questions.

[10]

- (i) What is Transform Mapping? Explain first level factoring and second level factoring in transform mapping with the help of an example.
- (ii) What are personal and team process models? Write a note on Team Software Process.

OR

Q.6 Attempt the following questions.

[10]

- (i) List and Explain various elements used in building requirements model in traditional software engineering.
- (ii) List and Explain Evolutionary models in traditional software engineering.



DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF MANAGEMENT AND INFORMATION SCIENCES
MCA SEMESTER II

SUBJECT: (MCA224) Cyber Security and Digital Forensics

Examination : External
Date : 20/05/2022
Time : 3 Hrs

Seat No : _____
Day : Friday
Max. Marks : 60

INSTRUCTIONS:

1. Answer each section in separate answer book.
2. Figures to the right indicate maximum marks for that question.
3. The symbols used carry their usual meanings.
4. Assume suitable data, if required & mention them clearly.
5. Draw neat sketches wherever necessary.

SECTION - I

Q.1 Do as directed.

1. _____ is not a security and privacy threat in real.
a) Virus b) Worm c) Spam d) Hacker [10]
1
2. Repeatedly following a person for harassment is an example of _____.
a) identity theft b) stalking c) bullying d) phishing 1
3. Special type of programs used for tracking and recording user's keystroke are known as _____.
a) Key-logger b) Trojans c) Virus d) Worms 1
4. Hackers who help in finding bugs and vulnerabilities in a system & don't intend to crack a system are termed as _____.
a) Black Hat hackers b) White Hat Hackers
c) Grey Hat Hackers d) Crackers 1
5. _____ observes each activity of the victim on his/her system, gather all information in the background, and send it to the attacker.
a) Malware b) Spyware c) Adware d) All of the above 1
6. Which of the following are the types of scanning?
a) Network, vulnerability, and port scanning b) Port, network, and services
c) Client, Server, and network d) None of the above 1
7. Mobile phone operating systems contain open _____ that may be vulnerable to different types of cyber-attacks.
a) OS b) APIs c) Keyloggers d) Spyware 1
8. Which of the following is true regarding secure password?
a) Use the same password for each account c) Use personal information
b) Random passwords are the strongest d) None of the above 1
9. _____ attack attempts to alter system resources or affect their operation?
a) active b) passive c) dual d) third-party 1
10. Users are able to see a pad-lock icon in the address bar of the browser when there is _____ connection.
a) HTTP b) HTTPS c) SMTP d) FTP 1

Q.2 Attempt Any TWO from the following questions.

- (a) What are the different phases and activities involved in a digital forensic life cycle? Support the activities performed in different phases with suitable example. [10]
[5]
- (b) What is chain of custody? Explain how it is applied in digital forensic investigations. [5]
- (c) What is cloud computing? What are the services provided by cloud computing? Explain security risks associated with cloud computing environment? [5]

- Q.3** (a) What is Digital Analysis? What are the types of digital analysis? Explain all types in brief. [6]
- (b) Explain the key steps to be performed in solving a digital forensic case. [4]

OR

- Q.3** (a) Explain what "Rules of Evidence" are? What are the guidelines to be considered for the evidence collection phase? [6]
- (b) Briefly explain the forensics of scanners, printers and digital images. [4]

SECTION - II

Q.4 Do as directed.

[10]

- Computer forensics can also be used in civil proceedings. State True/False. Justify.
- _____ is not a type of hacking any smart-phone.
 - Target mobile hardware vulnerabilities
 - Target apps' vulnerabilities
 - Snatching
 - Setup Keyloggers
- Acquisition of data from a hand-held device is carried out by _____.
 - physical acquisition
 - logical acquisition
 - both a) and b)
 - None
- The "rules of evidence" were first time listed in _____.
 - Indian IT Act 2000
 - Indian IT Act 2008
 - Indian Evidence Act 1872
 - Indian Penal Code (IPC)
- Personal Digital Assistant is also known as _____.
 - palm device
 - hand-held device
 - both a) and b)
 - None of these
- _____ is a hybrid version of boot sector and program viruses.
 - Stealth
 - Multipartite
 - Polymorphic
 - Macro
- HTTP Tunneling is used to _____.
 - HTTP is an easy protocol to work with
 - Web activity is not scanned
 - To bypass a firewall
 - To identify proxy servers
- _____ is a device from Paraben, for viewing cell phone data.
 - EnCase
 - Device Seizure
 - Palm DD
 - Cell Seizure
- File carving is a technique used to recover deleted data in forensic investigation. State True/False. Justify.
- _____ is not allowed in a Digital Forensics Investigation.
 - Declare any confidential matters publicly
 - To respect the privacy of others
 - Uphold any relevant evidence
 - All of these

Q.5 Attempt **Any TWO** from the following questions.

[10]

- What is Patriot hacking? Who can do it? Give real life example of Patriot hacking.
- What is Password cracking? Explain manual password cracking. What is offline and online attacks in password cracking?
- What is a Proxy server? How cyber criminals use it? List purposes of using proxy servers in computer networks.

Q.6 (a) Define Phishing. What are the countermeasures to prevent phishing attacks? Explain [6]
SPS algorithm to thwart phishing attack.

(b) What are the Do's and Don'ts to prevent credit card frauds?

[4]

OR

Q.6 (a) List and explain at least three different ID Theft techniques in detail.

[4]

- (b) What is Cybercrime? What are the different ways to define it? Explain different [6]
categories of Cybercrime in detail.