

**Department of Engineering Technology**

SET-222

Software Operations & Maintenance

Experiment # 10

**Experiment Title**

**Disaster Recovery Planning (**Concepts, backup strategies, failover mechanisms)

**Assessment of CLO(s): 03**

**Performed on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| **Student Name:** |  | | |
| **Roll No.** |  | **Group** |  |
| **Semester** |  | **Session** |  |

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| **S. No.** | **Perf. Level**  **Criteria** | **Excellent**  **(2.5)** | **Good**  **(2)** | **Satisfactory**  **(1.5)** | **Needs Improvement**  **(0 ~ 1)** | **Marks Obtained** |
| **1** | Project Execution & Implementation | Fully functional, optimized, and well-structured. | Minor errors, mostly functional. | Some errors, requires guidance. | Major errors, non-functional, or not Performed. |  |
| **2** | Results & Debugging  Or Troubleshooting | Accurate results with effective debugging  Or Troubleshooting. | Mostly correct, some debugging Or Troubleshooting needed. | Partial results, minimal debugging  Or Troubleshooting. | Incorrect results, no debugging Or Troubleshooting, or not attempted. |  |
| **3** | Problem-Solving & Adaptability  (VIVA) | Creative approach, efficiently solves challenges. | Adapts well, minor struggles. | Some adaptability, needs guidance. | Lacks innovation or no innovation, unable to solve problems. |  |
| **4** | Report Quality & Documentation | Clear, structured, with detailed visuals. | Mostly clear, minor gaps. | Some clarity issues, missing details. | Poorly structured, lacks clarity, or not submitted. |  |
| **Total Marks Obtained Out of 10** | | | | | |  |

**Experiment evaluated by**

|  |  |  |  |
| --- | --- | --- | --- |
| **Instructor’s Name** | **Ms. Shagufta Aftab** | | |
| **Date** |  | **Signature** |  |

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**Objective:**

To understand disaster recovery principles, explore backup methods, and simulate failover scenarios in IT systems to maintain business continuity.

**Tools and Software Required:**

* Virtualization software (e.g., VMware, VirtualBox)
* Backup utilities (e.g., Windows Backup, rsync, tar)
* Cloud or external storage (USB, NAS, cloud account)
* Operating system with admin access (Windows/Linux)
* Optional: HA tools (e.g., Pacemaker, Keepalived)

**Theory Concepts:**

**Disaster Recovery (DR)**

* A documented process or set of procedures to recover and protect a business IT infrastructure in case of a disaster.

**Backup Strategies**

* **Full Backup** – Complete copy of all data
* **Incremental Backup** – Only changes since last backup
* **Differential Backup** – Changes since last full backup
* **3-2-1 Rule:** 3 copies, 2 different media, 1 offsite

**Failover Mechanisms**

* Automatic or manual switching to a standby system upon failure
* Can be local (same site) or geographic (cloud or remote site)
* Involves redundant servers, storage, or power

**Lab Tasks:**

**Task 1: Backup Simulation**

* Perform a full backup of selected files/folders using a backup utility
* Perform an incremental backup
* Verify restoration by restoring selected files to a test folder

**Task 2: Failover Demonstration (Basic Simulation)**

* Use two virtual machines to simulate primary and backup systems
* Shut down the primary VM and test access to the secondary system

**Task 3: Create a Basic DR Plan Document**

* Include asset inventory, recovery objectives (RTO, RPO), contact persons
* List backup locations, frequency, and tools used
* Document failover triggers and response flow

**Expected Outcomes:**

* Understand disaster recovery frameworks and backup strategies
* Perform basic backup and restore operations
* Simulate and understand failover concepts
* Draft a recovery plan for a small IT setup

**Assessment Questions:**

1. What is the difference between RTO and RPO?
2. Name and describe three types of backup strategies.
3. What is the purpose of a failover system?
4. Why is the 3-2-1 backup rule important?
5. List two common tools used in disaster recovery planning.