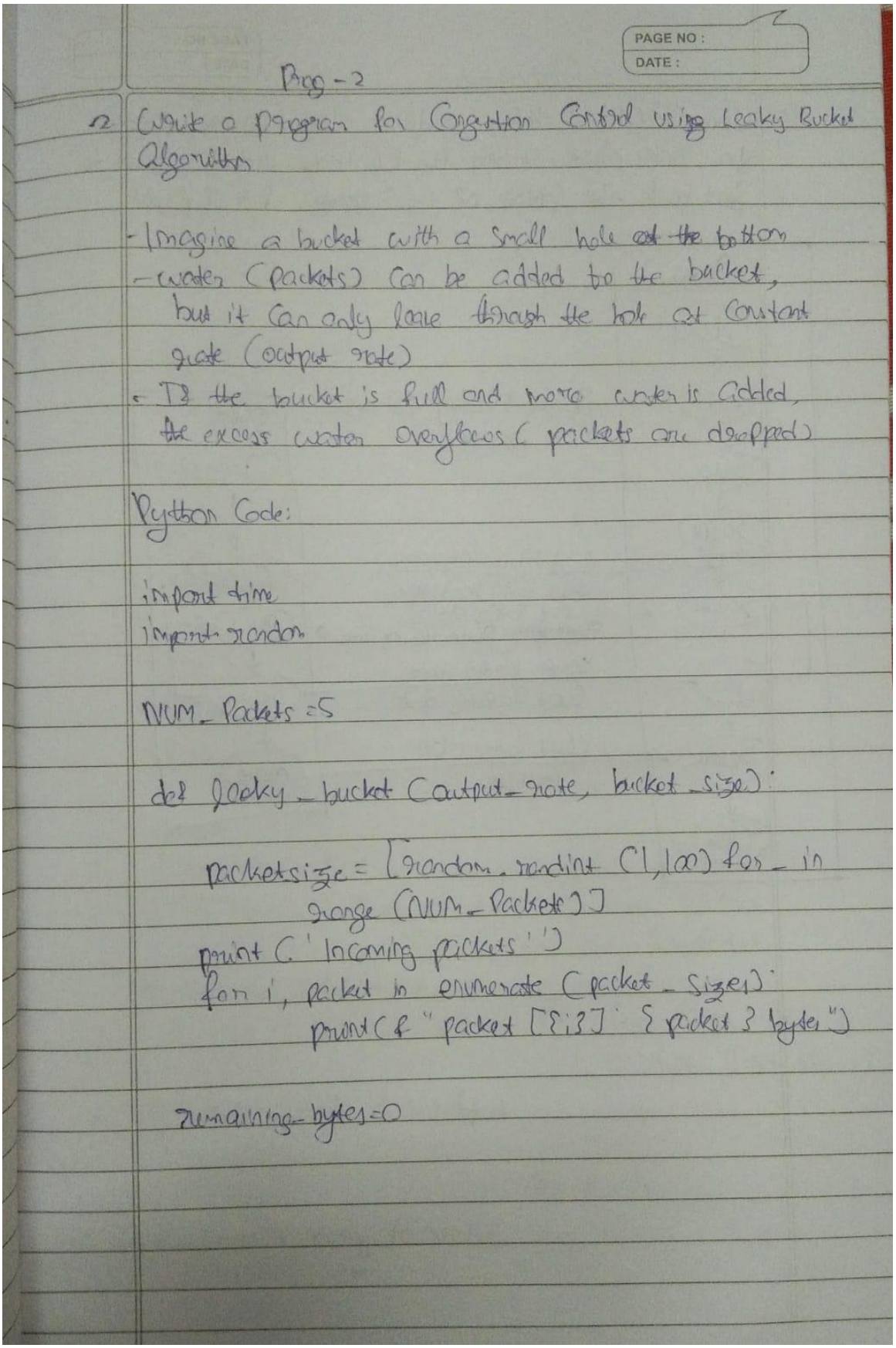
## LABORATORY PROGRAM – 2

Write a program for congestion control using Leaky bucket algorithm.



Prog - 2

2 Write a program for Congestion Control using Leaky Bucket Algorithm

- Imagine a bucket with a small hole at the bottom
- water (packets) can be added to the bucket, but it can only leave through the hole at constant rate (output rate)
- If the bucket is full and more water is added, the excess water overflows (packets are dropped)

Python Code:

```
import time
import random

NUM_Packets = 5

def leaky_bucket (output_rate, bucket_size):

    packetsize = [random.randint (1,100) for _ in
                  range (NUM_Packets)]
    print ("Incoming packets")
    for i, packet in enumerate (packet_size):
        print (f"packet [{i}]: {packet} bytes")

remaining_bytes = 0
```

## Code

```
# Getting user inputs
storage = int(input("Enter initial packets in the bucket: "))
no_of_queries = int(input("Enter total no. of times bucket content is checked: "))
bucket_size = int(input("Enter total no. of packets that can be accommodated in the bucket:
"))
input_pkt_size = int(input("Enter no. of packets that enters the bucket at a time: "))
output_pkt_size = int(input("Enter no. of packets that exits the bucket at a time: "))

for i in range(no_of_queries):  # space left
    size_left = bucket_size - storage
    if input_pkt_size <= size_left:
        # update storage
        storage += input_pkt_size
    else:
        print("Packet loss =", input_pkt_size)

    print(f"Buffer size = {storage} out of bucket size = {bucket_size}")

    # as packets are sent out into the network, the size of the storage decreases
    storage -= output_pkt_size
```

## Output

```
Enter initial packets in the bucket: 0
Enter total no. of times bucket content is checked: 4
Enter total no. of packets that can be accommodated in the bucket: 10
Enter no. of packets that enters the bucket at a time: 4
Enter no. of packets that exits the bucket at a time: 1
Buffer size = 4 out of bucket size = 10
Buffer size = 7 out of bucket size = 10
Buffer size = 10 out of bucket size = 10
Packet loss = 4
Buffer size = 9 out of bucket size = 10
```