Question 1

1a. Processes are scheduled using priority scheduler with preemption of a process whenever a new process arrived. Write a C program for implementation of Priority scheduling algorithms. Calculate the average waiting time of the process.

Process	Burst time	Priority	Arrival time
A	5	2	0
B	4	1 (highest)	2
C	3	3	3
D	2	4	4

1b. Write a shell program to print a fibonacci series. A) The script should accept the input from the command line. B) If you don't input any data, then display an error message.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b (10 marks)**	**Quiz (10 marks)**	**Total (50)**

QUESTION 2

2a. Consider the following processes with burst time and arrival time. Assume that the above processes are scheduled by RR scheduler with TQ=2 units. Calculate the average turn-around time of the processes

Process	Burst time	Arrival time
P1	4	2
P2	5	0
P3	3	3
P4	2	1

2b. What are system calls? How are they different from normal function calls? What is fork system call used for? Write a program to create a new process using fork().

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 3

3a. Consider the following processes with burst time and arrival time. Calculate the average waiting time of the processes when the process is scheduled using SRTF scheduling.

Process	Arrival time	Burst time
U	0	4
V	1	3
W	2	3
X	3	3
Y	5	2

3b. Write a program to create a orphan process using fork().

Aim and Algorithm-a (10)	**Output-a (10)**	**Aim and Algorithm-b (10)**	**Output-b(10)**	**Quiz(10)**	**Total (50)**

QUESTION 4

4a. Consider the following table. Calculate the average waiting time of the when the process is scheduled in FCFS.

Process	Burst time	Arrival time
P1	4	2
P2	5	0
P3	3	3
P4	2	1

4b. To write a C program to create 2 threads, first to find the sum of odd numbers, second to find the sum of even numbers. Finally display the list of odd and even numbers

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 5

5a. Consider the following processes with burst time and arrival time. Assume that the above processes are scheduled by RR scheduler with TQ=2 units. Calculate the average waiting time of the processes

Process	Arrival time	Burst time
P	0	5
Q	2	6
R	4	3
S	5	1

5b. Write a program to create a zombie process using fork()

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 6

6a. To write a program for Banker's safety algorithm to detect deadlock in Operating System (Total A=10, b=7, C=7)

Process	Allocation			Maximum			Need			Available		
	A	B	C	A	B	C	A	B	C	A	B	C
P1	0	1	0	7	5	3	7	4	3	3	3	2
P2	2	0	0	3	2	2	1	2	2			
P3	3	0	2	9	0	2	6	0	0			
P4	2	1	1	2	2	2	0	1	1			
P5	0	0	2	4	3	3	4	3	1			

6b. Write a shell program to check whether given three number are equal or not. The script should accept the input from the command line

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 7

7a. Consider the following processes with burst time, priority and arrival time. Calculate the average turn-around time of the processes when the process is scheduled in SRTF.

Process	Burst time	Arrival time
P	2	0
Q	4	3
R	3	2
S	2	1

7b. Write a shell program to find to whether a given number is prime number or not using if else condition. The script should accept the input from the command line.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 8

8a. Consider the following processes with burst time, priority and arrival time. Calculate the average waiting time of the processes when the process is scheduled in SRTF.

Process	Arrival time	Burst time
U	0	4
V	1	3
W	2	3
X	3	3
Y	5	2

8b. To write a C program for implementation memory allocation methods for fixed partition using first fit.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 9

9a. Consider the following processes with burst time, priority and arrival time. Calculate the average turn-around time of the processes when the process is scheduled in SRTF.

Process	Burst time	Arrival time
P	2	0
Q	4	3
R	3	2
S	2	1

9b. To write a C program for implementation memory allocation methods for fixed partition using best fit.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

Question 10

10a. Consider the following processes with burst time, priority and arrival time. Calculate the average turn-around time of the processes

Process	Burst time	Arrival time	Priority
P1	4	2	3
P2	5	0	1(high)
P3	3	3	4(low)
P4	2	1	2

10b. Write a shell script to print a number in reverse order. It should support the following requirements:

i) The script should accept the input from the command line.

ii) If you don't input any data, then display an error message.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 11

11a. Consider the following processes with burst time and arrival time. Calculate the average waiting time of the processes when the process is scheduled in FCFS.

Process	Arrival time	Burst time
U	0	4
V	1	3
W	2	3
X	3	3
Y	5	2

11b Write a multithreaded program that calculates various statistical values for a list of numbers. One thread will determine the average of the numbers, the second will determine the maximum value.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 12

12a. Total write a program for Banker's safety algorithm to detect deadlock in Operating System (total A=12, B=9, C=12)

Process	Allocation			Maximum			Need			Available		
	A	B	C	A	B	C	A	B	C	A	B	C
P1	4	3	4	2	1	3	2	2	1	2	1	1
P2	5	3	3	1	2	3	4	1	0			
P3	6	4	3	5	4	3	1	0	0			
P4	4	1	2	2	1	2	2	0	0			

12b. Write a shell program to check whether given three number are equal or not. The script should accept the input from the command line

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 13

13a. Consider the following processes with burst time, priority and arrival time. Calculate the average turn-around time of the processes

Process	Burst time	Arrival time	Priority
P1	4	2	3
P2	5	0	1(high)
P3	3	3	4(low)
P4	2	1	2

13b. Write a Shell program to find a factorial of a number. The script should accept the input from the command line.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 14

14a. Consider the following processes with burst time and arrival time. SJF Scheduling selects always the shortest job. Calculate the average turn-around time of the processes

Process	Burst time	Arrival time
P	2	0
Q	4	3
R	3	1
S	2	2

14b. To write a C program for implementation memory allocation methods for fixed partition using first fit.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 15

15a. Consider the following processes with burst time and arrival time. Assume that the above processes are scheduled by RR scheduler with TQ=2 units. Calculate the average waiting time of the processes

Process	Arrival time	Burst time
P	0	5
Q	2	6
R	4	3
S	5	1

15b. Write a shell program to check whether the given book is available or not. The set of books are {Data structure, Operating system, Discrete mathematics, Algorithms}. If the book is not found, display an error message.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 16

16a. Consider the following processes with burst time and arrival time. Calculate the average waiting time of the processes when the process is scheduled in FCFS.

Process	Arrival time	Burst time
U	0	4
V	1	3
W	2	3
X	3	3
Y	5	2

16b. Write a multithreaded program that calculates various statistical values for a list of numbers. One thread will determine the mean of the numbers, the second will determine the maximum value.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 17

17a. To write a program for Banker's safety algorithm to detect deadlock in Operating System (Total A=10, b=7, C=7)

Process	Allocation			Maximum			Need			Available		
	A	B	C	A	B	C	A	B	C	A	B	C
P1	0	1	0	7	5	3	7	4	3	3	3	2
P2	2	0	0	3	2	2	1	2	2			
P3	3	0	2	9	0	2	6	0	0			
P4	2	1	1	2	2	2	0	1	1			
P5	0	0	2	4	3	3	4	3	1			

17b. What are system calls? How are they different from normal function calls? What is fork system call used for? Write a program to add two numbers using fork().

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 18

18a. Consider the following processes with burst time, priority and arrival time. Calculate the average turn-around time of the processes

Process	Burst time	Arrival time	Priority
P	2	0	2(high)
Q	4	3	4
R	3	1	5(low)
S	2	2	3

18b. Write a Shell program to swap the two non-negative integers. The script should accept the input from the command line.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 19

19a. Consider the following processes with burst time and arrival time. SJF Scheduling selects always the shortest job. Calculate the average waiting time of the processes

Process	Burst time	Arrival time
A	5	0
B	4	2
C	3	3
D	2	4

19b. To write a C program for implementation memory allocation methods for fixed partition using best fit.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 20

20a. Consider the following processes with burst time and arrival time. Calculate the average turn-around time of the processes when the process is scheduled in FCFS.

Process	Burst time	Arrival time
P	2	0
Q	4	3
R	3	2
S	2	1

20b. To write a C program to create 2 threads, first to find the sum of odd numbers, second to find the sum of even numbers. Finally display the list of odd and even numbers

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 21

21a. Consider the following processes with burst time and arrival time. Assume that the above processes are scheduled by RR scheduler with TQ=2 units. Calculate the average turn-around time of the processes

Process	Burst time	Arrival time
P1	4	2
P2	5	0
P3	3	3
P4	2	1

21b. Write a shell program to find greatest number among three numbers. The script should accept the input from the command line.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 22

22a. Total write a program for Banker's safety algorithm to detect deadlock in Operating System (total A=12, B=9, C=12)

Process	Allocation			Maximum			Need			Available		
	A	B	C	A	B	C	A	B	C	A	B	C
P1	4	3	4	2	1	3	2	2	1	2	1	1
P2	5	3	3	1	2	3	4	1	0			
P3	6	4	3	5	4	3	1	0	0			
P4	4	1	2	2	1	2	2	0	0			

22b. Write a shell program to find greatest number among three numbers. The script should accept the input from the command line.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 23

23a. Consider the following processes with burst time and arrival time. SJF Scheduling selects always the shortest job. Calculate the average turn-around time of the processes

Process	Arrival time	Burst time
U	0	4
V	1	3
W	2	3
X	3	3
Y	5	2

23b. Write a program to create a orphan process using fork().

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 24

24a. Consider the following table. Calculate the average waiting time of the when the process is scheduled in SRTF.

Process	Burst time	Arrival time
A	5	0
B	7	1
C	3	3
D	6	4

24b. Write a program to create a zombie process using fork().

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

Question 25

25a. Processes are scheduled using priority scheduler with preemption of a process whenever a new process arrived. Write a C program for implementation of Priority scheduling algorithms. Calculate the average waiting time of the process.

Process	Burst time	Priority	Arrival time
A	5	2	0
B	4	1 (highest)	2
C	3	3	3
D	2	4	4

25b. Write a shell program to print a fibonacci series. A) The script should accept the input from the command line. B) If you don't input any data, then display an error message.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b (10 marks)**	**Quiz (10 marks)**	**Total (50)**

QUESTION 26

26a. Consider the following processes with burst time and arrival time. Assume that the above processes are scheduled by RR scheduler with TQ=2 units. Calculate the average turn-around time of the processes

Process	Burst time	Arrival time
P1	4	2
P2	5	0
P3	3	3
P4	2	1

26b. What are system calls? How are they different from normal function calls? What is fork system call used for? Write a program to create a new process using fork().

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 27

27a. Consider the following processes with burst time and arrival time. Calculate the average waiting time of the processes when the process is scheduled using SRTF scheduling.

Process	Arrival time	Burst time
U	0	4
V	1	3
W	2	3
X	3	3
Y	5	2

27b. Write a program to create a orphan process using fork().

Aim and Algorithm-a (10)	**Output-a (10)**	**Aim and Algorithm-b (10)**	**Output-b(10)**	**Quiz(10)**	**Total (50)**

QUESTION 28

28a. Consider the following table. Calculate the average waiting time of the when the process is scheduled in FCFS.

Process	Burst time	Arrival time
P1	4	2
P2	5	0
P3	3	3
P4	2	1

28b. To write a C program to create 2 threads, first to find the sum of odd numbers, second to find the sum of even numbers. Finally display the list of odd and even numbers

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 29

29a. Consider the following processes with burst time and arrival time. Assume that the above processes are scheduled by RR scheduler with TQ=2 units. Calculate the average waiting time of the processes

Process	Arrival time	Burst time
P	0	5
Q	2	6
R	4	3
S	5	1

29b. Write a program to create a zombie process using fork()

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 30

30a. To write a program for Banker's safety algorithm to detect deadlock in Operating System (Total A=10, b=7, C=7)

Process	Allocation			Maximum			Need			Available		
	A	B	C	A	B	C	A	B	C	A	B	C
P1	0	1	0	7	5	3	7	4	3	3	3	2
P2	2	0	0	3	2	2	1	2	2			
P3	3	0	2	9	0	2	6	0	0			
P4	2	1	1	2	2	2	0	1	1			
P5	0	0	2	4	3	3	4	3	1			

30b. Write a shell program to check whether given three number are equal or not. The script should accept the input from the command line

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 31

31a. Consider the following processes with burst time, priority and arrival time. Calculate the average turn-around time of the processes when the process is scheduled in SRTF.

Process	Burst time	Arrival time
P	2	0
Q	4	3
R	3	2
S	2	1

31b. Write a shell program to find to whether a given number is prime number or not using if else condition. The script should accept the input from the command line.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 32

32a. Consider the following processes with burst time, priority and arrival time. Calculate the average waiting time of the processes when the process is scheduled in SRTF.

Process	Arrival time	Burst time
U	0	4
V	1	3
W	2	3
X	3	3
Y	5	2

32b. To write a C program for implementation memory allocation methods for fixed partition using first fit.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 33

33a. Consider the following processes with burst time, priority and arrival time. Calculate the average turn-around time of the processes when the process is scheduled in SRTF.

Process	Burst time	Arrival time
P	2	0
Q	4	3
R	3	2
S	2	1

33b. To write a C program for implementation memory allocation methods for fixed partition using best fit.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

Question 34

34a. Consider the following processes with burst time, priority and arrival time. Calculate the average turn-around time of the processes

Process	Burst time	Arrival time	Priority
P1	4	2	3
P2	5	0	1(high)
P3	3	3	4(low)
P4	2	1	2

34b. Write a shell script to print a number in reverse order. It should support the following requirements:

i) The script should accept the input from the command line.

ii) If you don't input any data, then display an error message.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 35

35a. Consider the following processes with burst time and arrival time. Calculate the average waiting time of the processes when the process is scheduled in FCFS.

Process	Arrival time	Burst time
U	0	4
V	1	3
W	2	3
X	3	3
Y	5	2

35b. Write a multithreaded program that calculates various statistical values for a list of numbers. One thread will determine the average of the numbers, the second will determine the maximum value.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 36

36a. Total write a program for Banker's safety algorithm to detect deadlock in Operating System (total A=12, B=9, C=12)

Process	Allocation			Maximum			Need			Available		
	A	B	C	A	B	C	A	B	C	A	B	C
P1	4	3	4	2	1	3	2	2	1	2	1	1
P2	5	3	3	1	2	3	4	1	0			
P3	6	4	3	5	4	3	1	0	0			
P4	4	1	2	2	1	2	2	0	0			

36b. Write a shell program to check whether given three number are equal or not. The script should accept the input from the command line

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 37

37a. Consider the following processes with burst time, priority and arrival time. Calculate the average turn-around time of the processes

Process	Burst time	Arrival time	Priority
P1	4	2	3
P2	5	0	1(high)
P3	3	3	4(low)
P4	2	1	2

37b. Write a Shell program to find a factorial of a number. The script should accept the input from the command line.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 38

38a. Consider the following processes with burst time and arrival time. SJF Scheduling selects always the shortest job. Calculate the average turn-around time of the processes

Process	Burst time	Arrival time
P	2	0
Q	4	3
R	3	1
S	2	2

38b. To write a C program for implementation memory allocation methods for fixed partition using first fit.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 39

39a. Consider the following processes with burst time and arrival time. Assume that the above processes are scheduled by RR scheduler with TQ=2 units. Calculate the average waiting time of the processes

Process	Arrival time	Burst time
P	0	5
Q	2	6
R	4	3
S	5	1

39b. Write a shell program to check whether the given book is available or not. The set of books are {Data structure, Operating system, Discrete mathematics, Algorithms}. If the book is not found, display an error message.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 40

40a. Consider the following processes with burst time and arrival time. Calculate the average waiting time of the processes when the process is scheduled in FCFS.

Process	Arrival time	Burst time
U	0	4
V	1	3
W	2	3
X	3	3
Y	5	2

40b. Write a multithreaded program that calculates various statistical values for a list of numbers. One thread will determine the average of the numbers, the second will determine the maximum value.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 41

41a. To write a program for Banker's safety algorithm to detect deadlock in Operating System (Total A=10, b=7, C=7)

Process	Allocation			Maximum			Need			Available		
	A	B	C	A	B	C	A	B	C	A	B	C
P1	0	1	0	7	5	3	7	4	3	3	3	2
P2	2	0	0	3	2	2	1	2	2			
P3	3	0	2	9	0	2	6	0	0			
P4	2	1	1	2	2	2	0	1	1			
P5	0	0	2	4	3	3	4	3	1			

41b. What are system calls? How are they different from normal function calls? What is fork system call used for? Write a program to create a new process using fork().

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 42

a. Consider the following processes with burst time, priority and arrival time. Calculate the average turn-around time of the processes

Process	Burst time	Arrival time	Priority
P	2	0	2(high)
Q	4	3	4
R	3	1	5(low)
S	2	2	3

b. Write a Shell program to swap the two non-negative integers. The script should accept the input from the command line.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 43

a. Consider the following processes with burst time and arrival time. SJF Scheduling selects always the shortest job. Calculate the average waiting time of the processes

Process	Burst time	Arrival time
A	5	0
B	4	2
C	3	3
D	2	4

b. To write a C program for implementation memory allocation methods for fixed partition using best fit.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 44

a. Consider the following processes with burst time and arrival time. Calculate the average turn-around time of the processes when the process is scheduled in FCFS.

Process	Burst time	Arrival time
P	2	0
Q	4	3
R	3	2
S	2	1

b. To write a C program to create 2 threads, first to find the sum of odd numbers, second to find the sum of even numbers. Finally display the list of odd and even numbers

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 45

a. Consider the following processes with burst time and arrival time. Assume that the above processes are scheduled by RR scheduler with TQ=2 units. Calculate the average turn-around time of the processes

Process	Burst time	Arrival time
P1	4	2
P2	5	0
P3	3	3
P4	2	1

b. Write a shell program to find greatest number among three numbers. The script should accept the input from the command line.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 46

a. Total write a program for Banker's safety algorithm to detect deadlock in Operating System (total A=12, B=9, C=12)

Process	Allocation			Maximum			Need			Available		
	A	B	C	A	B	C	A	B	C	A	B	C
P1	4	3	4	2	1	3	2	2	1	2	1	1
P2	5	3	3	1	2	3	4	1	0			
P3	6	4	3	5	4	3	1	0	0			
P4	4	1	2	2	1	2	2	0	0			

b. Write a shell program to find greatest number among three numbers. The script should accept the input from the command line.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 47

a. Consider the following processes with burst time and arrival time. SJF Scheduling selects always the shortest job. Calculate the average turn-around time of the processes

Process	Arrival time	Burst time
U	0	4
V	1	3
W	2	3
X	3	3
Y	5	2

b. Write a program to create an orphan process using fork().

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 48

48a. Consider the following table. Calculate the average waiting time of the when the process is scheduled in SRTF.

Process	Burst time	Arrival time
A	5	0
B	7	1
C	3	3
D	6	4

48b. Write a program to create a zombie process using fork().

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

Question 49

a. Processes are scheduled using priority scheduler with preemption of a process whenever a new process arrived. Write a C program for implementation of Priority scheduling algorithms. Calculate the average waiting time of the process.

Process	Burst time	Priority	Arrival time
A	5	2	0
B	4	1 (highest)	2
C	3	3	3
D	2	4	4

b. Write a shell program to print a fibonacci series. A) The script should accept the input from the command line. B) If you don't input any data, then display an error message.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b (10 marks)**	**Quiz (10 marks)**	**Total (50)**

QUESTION 50

a. Consider the following processes with burst time and arrival time. Assume that the above processes are scheduled by RR scheduler with TQ=2 units. Calculate the average turn-around time of the processes

Process	Burst time	Arrival time
P1	4	2
P2	5	0
P3	3	3
P4	2	1

b. What are system calls? How are they different from normal function calls? What is fork system call used for? Write a program to create a new process using fork().

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 51

a. Consider the following processes with burst time and arrival time. Calculate the average waiting time of the processes when the process is scheduled using SRTF scheduling.

Process	Arrival time	Burst time
U	0	4
V	1	3
W	2	3
X	3	3
Y	5	2

b. Write a program to create a orphan process using fork().

Aim and Algorithm-a (10)	**Output-a (10)**	**Aim and Algorithm-b (10)**	**Output-b(10)**	**Quiz(10)**	**Total (50)**

QUESTION 52

a. Consider the following table. Calculate the average waiting time of the when the process is scheduled in FCFS.

Process	Burst time	Arrival time
P1	4	2
P2	5	0
P3	3	3
P4	2	1

b. To write a C program to create 2 threads, first to find the sum of odd numbers, second to find the sum of even numbers. Finally display the list of odd and even numbers

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 53

a. Consider the following processes with burst time and arrival time. Assume that the above processes are scheduled by RR scheduler with TQ=2 units. Calculate the average waiting time of the processes

Process	Arrival time	Burst time
P	0	5
Q	2	6
R	4	3
S	5	1

b. Write a program to create a zombie process using fork()

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 54

a. To write a program for Banker's safety algorithm to detect deadlock in Operating System (Total A=10, b=7, C=7)

Process	Allocation			Maximum			Need			Available		
	A	B	C	A	B	C	A	B	C	A	B	C
P1	0	1	0	7	5	3	7	4	3	3	3	2
P2	2	0	0	3	2	2	1	2	2			
P3	3	0	2	9	0	2	6	0	0			
P4	2	1	1	2	2	2	0	1	1			
P5	0	0	2	4	3	3	4	3	1			

b. Write a shell program to check whether given three number are equal or not. The script should accept the input from the command line

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 55

a. Consider the following processes with burst time, priority and arrival time. Calculate the average turn-around time of the processes when the process is scheduled in SRTF.

Process	Burst time	Arrival time
P	2	0
Q	4	3
R	3	2
S	2	1

b. Write a shell program to find to whether a given number is prime number or not using if else condition. The script should accept the input from the command line.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 56

a. Consider the following processes with burst time, priority and arrival time. Calculate the average waiting time of the processes when the process is scheduled in SRTF.

Process	Arrival time	Burst time
U	0	4
V	1	3
W	2	3
X	3	3
Y	5	2

b. To write a C program for implementation memory allocation methods for fixed partition using first fit.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 57

a. Consider the following processes with burst time, priority and arrival time. Calculate the average turn-around time of the processes when the process is scheduled in SRTF.

Process	Burst time	Arrival time
P	2	0
Q	4	3
R	3	2
S	2	1

b. To write a C program for implementation memory allocation methods for fixed partition using best fit.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

Question 58

a. Consider the following processes with burst time, priority and arrival time. Calculate the average turn-around time of the processes

Process	Burst time	Arrival time	Priority
P1	4	2	3
P2	5	0	1(high)
P3	3	3	4(low)
P4	2	1	2

b. Write a shell script to print a number in reverse order. It should support the following requirements:

i) The script should accept the input from the command line.

ii) If you don't input any data, then display an error message.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 59

a. Consider the following processes with burst time and arrival time. Calculate the average waiting time of the processes when the process is scheduled in FCFS.

Process	Arrival time	Burst time
U	0	4
V	1	3
W	2	3
X	3	3
Y	5	2

b. Write a multithreaded program that calculates various statistical values for a list of numbers. One thread will determine the mean of the numbers, the second will determine the maximum value.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 60

a. Total write a program for Banker's safety algorithm to detect deadlock in Operating System (total A=12, B=9, C=12)

Process	Allocation			Maximum			Need			Available		
	A	B	C	A	B	C	A	B	C	A	B	C
P1	4	3	4	2	1	3	2	2	1	2	1	1
P2	5	3	3	1	2	3	4	1	0			
P3	6	4	3	5	4	3	1	0	0			
P4	4	1	2	2	1	2	2	0	0			

b. Write a shell program to check whether given three number are equal or not. The script should accept the input from the command line

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 61

a. Consider the following processes with burst time, priority and arrival time. Calculate the average turn-around time of the processes

Process	Burst time	Arrival time	Priority
P1	4	2	3
P2	5	0	1(high)
P3	3	3	4(low)
P4	2	1	2

b. Write a Shell program to find a factorial of a number. The script should accept the input from the command line.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 62

a. Consider the following processes with burst time and arrival time. SJF Scheduling selects always the shortest job. Calculate the average turn-around time of the processes

Process	Burst time	Arrival time
P	2	0
Q	4	3
R	3	1
S	2	2

b. To write a C program for implementation memory allocation methods for fixed partition using first fit.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 63

a. Consider the following processes with burst time and arrival time. Assume that the above processes are scheduled by RR scheduler with TQ=2 units. Calculate the average waiting time of the processes

Process	Arrival time	Burst time
P	0	5
Q	2	6
R	4	3
S	5	1

b. Write a shell program to check whether the given book is available or not. The set of books are {Data structure, Operating system, Discrete mathematics, Algorithms}. If the book is not found, display an error message.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 64

a. Consider the following processes with burst time and arrival time. Calculate the average waiting time of the processes when the process is scheduled in FCFS.

Process	Arrival time	Burst time
U	0	4
V	1	3
W	2	3
X	3	3
Y	5	2

b. Write a multithreaded program that calculates various statistical values for a list of numbers. One thread will determine the average of the numbers, the second will determine the maximum value.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 65

a. To write a program for Banker's safety algorithm to detect deadlock in Operating System (Total A=10, b=7, C=7)

Process	Allocation			Maximum			Need			Available		
	A	B	C	A	B	C	A	B	C	A	B	C
P1	0	1	0	7	5	3	7	4	3	3	3	2
P2	2	0	0	3	2	2	1	2	2			
P3	3	0	2	9	0	2	6	0	0			
P4	2	1	1	2	2	2	0	1	1			
P5	0	0	2	4	3	3	4	3	1			

b. What are system calls? How are they different from normal function calls? What is fork system call used for? Write a program to create a new process using fork().

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 66

a. Consider the following processes with burst time, priority and arrival time. Calculate the average turn-around time of the processes

Process	Burst time	Arrival time	Priority
P	2	0	2(high)
Q	4	3	4
R	3	1	5(low)
S	2	2	3

b. Write a Shell program to swap the two non-negative integers. The script should accept the input from the command line.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 67

a. Consider the following processes with burst time and arrival time. SJF Scheduling selects always the shortest job. Calculate the average waiting time of the processes

Process	Burst time	Arrival time
A	5	0
B	4	2
C	3	3
D	2	4

b. To write a C program for implementation memory allocation methods for fixed partition using best fit.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 68

a. Consider the following processes with burst time and arrival time. Calculate the average turn-around time of the processes when the process is scheduled in FCFS.

Process	Burst time	Arrival time
P	2	0
Q	4	3
R	3	2
S	2	1

b. To write a C program to create 2 threads, first to find the sum of odd numbers, second to find the sum of even numbers. Finally display the list of odd and even numbers

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 69

a. Consider the following processes with burst time and arrival time. Assume that the above processes are scheduled by RR scheduler with TQ=2 units. Calculate the average turn-around time of the processes

Process	Burst time	Arrival time
P1	4	2
P2	5	0
P3	3	3
P4	2	1

b. Write a shell program to find greatest number among three numbers. The script should accept the input from the command line.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 70

a. Total write a program for Banker's safety algorithm to detect deadlock in Operating System (total A=12, B=9, C=12)

Process	Allocation			Maximum			Need			Available		
	A	B	C	A	B	C	A	B	C	A	B	C
P1	4	3	4	2	1	3	2	2	1	2	1	1
P2	5	3	3	1	2	3	4	1	0			
P3	6	4	3	5	4	3	1	0	0			
P4	4	1	2	2	1	2	2	0	0			

b. Write a shell program to find greatest number among three numbers. The script should accept the input from the command line.

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 71

a. Consider the following processes with burst time and arrival time. SJF Scheduling selects always the shortest job. Calculate the average turn-around time of the processes

Process	Arrival time	Burst time
U	0	4
V	1	3
W	2	3
X	3	3
Y	5	2

b. Write a program to create a orphan process using fork().

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**

QUESTION 72

a. Consider the following table. Calculate the average waiting time of the when the process is scheduled in SRTF.

Process	Burst time	Arrival time
A	5	0
B	7	1
C	3	3
D	6	4

b. Write a program to create a zombie process using fork().

Aim and Algorithm-a (10 marks)	**Output-a (10 marks)**	**Aim and Algorithm-b (10 marks)**	**Output-b(10 marks)**	**Quiz(10 marks)**	**Total (50)**