You will be marked as written at each question. You have to write your answers on the reserved blank space. No answers written out of place will be taken into account. You could not use a pencil for your answers.

1. **Write a definition of Operating System (1 POINT)**

2. **Write how the Scheduling algorithm named FIRST COME FIRST SERVED works (1 POINT)**

3. **Write how the Scheduling algorithm named SHORTEST-NEXT-CPU-BURST works (1 POINT)**

4. **Write how the Scheduling algorithm named PRIORITY SCHEDULING works (1 POINT)**

5. **Explain which is the purpose of commands *CAT* and *LESS* in a Linux Operating System (these commands should be executed on command line) (1 POINT)**

6. **Write a definition for system calls (1 POINT)**

7. **Write some Operating System functionalities (at least 5) (1 POINT)**

8. Enumerate some (at least 3) Scheduling techniques (1 POINT)

9. Done file _"TABLE.TXT"_ with the attached content (1 POINT)

1	2	3
4	5	6
7	8	9

Write which will be the result if we execute the attached script:
gawk 'BEGIN{sum=0};{sum=$1};END{print sum}' ./TABLE.TXT

10. **If you want to share information between a pair of processes using PIPES. If you create the pipe with the command pipe(can); Could you write the definition of variable can, and the purpose of the can[0] (1 POINT)**

11. **On a connection oriented client-server communication write the main functions (properly ordered) to send information from client to server, and then echo back the same information from server to client. Write only the name of the functions, no the parameters; do not declare variables. Write ONLY the functions involved with the socket used in the communication nothing else(1 POINT)**

12. **Which is the purpose of the system call LISTEN on a connection oriented communication? (1 POINT)**

13. **Write at least 5 types of information you can find on PCB (Process Control Block)? (1 POINT)**

14. **Write when a process is in the READY state. From which state the process can come from and to which state the process can be moved to (1 POINT)**

15. **Which is the role of a SCHEDULER? And the role of a DISPATCHER? (1 POINT)**

16. **Write how the maximizing CPU utilization scheduling criteria works (1 POINT)**

17. **Could you explain the problem related with BLOCKING STARVATION? When will we have the problem? How can we solve the problem? (1 POINT)**

18. **On a non-connection oriented client-server communication write the main functions (properly ordered) to send information from client to server, and then echo back the same information from server to client. Write only the name of the functions, no the parameters; do not declare variables. Write ONLY the functions involved with the socket used in the communication (nothing else)(1 POINT)**

19. **From the list of function calls written below with function *SOCKET()* tell which ones are correct and why: (1 POINT)**
A. **SOCK=SOCKET(PF_INET, SOCK_STREAM, IPPROTO_TCP)**
B. **SOCK=SOCKET(PF_INET, SOCK_DGRAM, IPPROTO_TCP)**
C. **SOCK=SOCKET(PF_INET, SOCK_DGRAM, IPPROTO_UDP)**
D. **SOCK=SOCKET(PF_INET, SOCK_STREAM, IPPROTO_UDP)**

20. **Explain which the objectives of the functions *SEM_POST* and *SEM_WAIT* are? Which are the parameter/s used on the functions? (1 POINT)**