UNIVERSITY OF GHANA
DEPARTMENT OF COMPUTER SCIENCE
OPERATING SYSTEM FUNDAMENTALS (CSCS 315)

SECTION A: MULTIPLE CHOICE QUESTIONS
SECTION B: ONE COMPULSORY QUESTION

EXAMINER: B.S.K WIREDU
TIME ALLOWED: 2 HOURS

SECTION A: ONE MARK FOR EACH CORRECT ANSWER (40 MARKS)

1. The first batch operating system was developed in the ..... by General Motors for use on an IBM 701.
A) mid 1940's
B) mid 1950's
C) mid 1960's
D) mid 1970's

2. With ..... only one process can execute at a time; meanwhile all other process are waiting for the processer. With ..... more than one process can be running simultaneously each on a different processer.
A) Multiprocessing, Multiprogramming
B) Multiprogramming, Uniprocessing
C) Multiprogramming, Multiprocessing
D) Uniprogramming, Multiprocessing

3. ..... is the ability of multiple process to co-ordinate their activities by exchange of information
A) Synchronization
B) Mutual Exclusion
C) Dead lock
D) Starvation

4. Which of the following is not the function of Micro kernel?
A) File management
B) Low-level memory management
C) Inter-process communication
D) I/O interrupts management

5. ..... is the time required to move the disk arm to the required track.
A) Seek time
B) Rotational delay
C) Latency time
D) Access time

6. ..... refers to the ability of an operating system to support multiple threads of execution with a single process.

A) Multithreading
B) Multiprocessing
C) Multiexecuting
D) Bi-threading

7. Which of the following are the states of a five state process model?
i) Running ii) Ready iii) New iv) Exit v) Destroy
A) i, ii, iii and v only
B) i, ii, iv and v only
C) i, ii, iii, and iv only
D) All i, ii, iii, iv and v

8. Following is/are the reasons for process suspension.
A) Swapping parent process
B) Inter request
C) Timing
D) All of the above

9. …….. is an example of an operating system that support single user process and single thread.
A) UNIX
B) MS-DOS
C) OS/2
D) Windows 2000

10. State true or false.
i) Unix, support multiple user process but only support one thread per process.
ii) A java run time environment is an example of a system of one process with multiple threads.
A) True, False
B) True, True
C) False, True
D) False, False

11. …… are very effective because a mode switch is not required to switch from one thread to another.
A) Kernel-level threads
B) User-level threads
C) Alterable threads
D) Application level threads

12. …… is a condition in which there is a set of concurrent processes, only one of which is able to access a given resource or perform a given function at any time.
A) Mutual Exclusion
B) Busy Waiting
C) Deadlock
D) Starvation

13. The following conditions of policy must be present for a deadlock to be possible.
i) Mutual exclusion ii) Hold and wait
iii) No preemption iv) Circular wait
A) i, ii and iii only
B) ii, iii and iv only
C) i, iii and iv only
D) All i, ii, iii and iv

14. A direct method of deadlock prevention is to prevent the occurrence of ……..
A) Mutual exclusion
B) Hold and wait
C) Circular waits
D) No preemption

15. State true of false.
i) With paging, each process is divided into relatively small, fixed-size pages.
ii) Segmentation provides for the use of pieces of varying size.
A) True, False
B) True, True
C) False, True
D) False, False

16. ……. Involves treating main memory as a resource to be allocated to and shared among a number of active processes.
A) Partition management
B) Memory management
C) Disk management
D) All of the above

17. A process that execute only in main memory is referred to as …… and that allocated in disk is referred to a …….
A) virtual memory, true memory
B) virtual memory, real memory
C) real memory, virtual memory
D) imaginary memory, real memory

18. In process scheduling, …… determines which ready process will be executed next by processor.
A) long term scheduling
B) medium term scheduling
C) short term scheduling
D) none of the above

19. Which of the following are the functions of operating system?
i) recovering from errors ii) facilitating input/output
iii) facilitating parallel operation iv) sharing hardware among users
v) implementing user interface

A) i, ii, ii, and v only
B) i, ii, iii, and iv only
C) ii, iii, iv and v only
D) All i, ii, iii, iv and v

20. File management function of the operating system includes
i) File creation and deletion ii) Disk scheduling
iii) Directory creation iv) Mapping file in secondary storage.
A) i, ii and iii only
B) i, iii and iv only
C) ii, iii and iv only
D) All i, ii, iii and iv

21. With ……. A page is written out to secondary memory only when it has been selected for replacement.
A) pre-cleaning
B) demand cleaning
C) required cleaning
D) fast cleaning

22. An algorithm is best described as

A. A) A computer language

B) A step by step procedure for solving a problem

C) A branch of mathematics

D) All of the above

23. The process of transferring data intended for a peripheral device into a disk (or intermediate store) so that it can be transferred to peripheral at a more convenient time or in bulk, is known as

A) multiprogramming

B) spooling

C) caching

D) virtual programming

24. Trojan-Horse programs

A. A) are legitimate programs that allow unauthorized access

B. B) do not usually work

C. C) are hidden programs that do not show up on the system

D. D) usually are immediately discovery

25. Which of the following is false about disk when compared to main memory?

A) non-volatile

B) longer storage capacity

C) lower price per bit

D) faster

26. The CPU, after receiving an interrupt from an I/O device

a) halts for a predetermined time

b) hands over control of address bus and data bus to the interrupting device

c) branches off to the interrupt service routine immediately

d) branches off to the interrupt service routine after completion of the current instruction

27. Which of the following is a type of systems software used on microcomputers?

a) MS-DOS

b) PC-DOS

c) Unix

d) All of the above

28. What is the name of the technique in which the operating system of a computer executes several programs concurrently by switching back and forth between them?

a) Partitioning

. b) Multitasking

c) Windowing

d) Paging

29. An Operating system

A. a) links a program with the subroutines it references

B. b) provides a layered, user-friendly interface

C. c) enables the programmer to draw a flowchart

D. d) all of the above

30. IBM released its first PC in 1981. Can you name the operating system which was most popular at that time?

a) MS-DOS

b) PC-DOS

c) OS/360

d) CP/M

31. Which of the following are forms of malicious attack?
a) Theft of information
b) Modification of data
c) Wiping of information
d) All of the mentioned

32. From the following, which is not a common file permission?
a) Write
b) Execute
c) Stop
d) Read

33. Which of the following is a good practice?
a) Give full permission for remote transferring
b) Grant read only permission
c) Grant limited permission to specified account
d) Give both read and write permission but not execute.

34. Which of the following is least secure method of authentication?
a) Key card
b) fingerprint
c) retina pattern
d) Password

35. Which of the following is a strong password?
a) 19thAugust88
b) Delhi88
c) P@assw0rd

d) !augustdelhi

36. Which happens first authorization or authentication?
a) Authorization
b) Authentication
c) Both are same
d) None of the mentioned

37. What forces the user to change password at first logon?
a) Default behaviour of OS
b) Part of AES encryption practice
c) Devices being accessed forces the user
d) Account administrator

38. Which one of the following is the address generated by CPU?
a) physical address
b) absolute address
c) logical address
d) none of the mentioned

39. Memory management technique in which system stores and retrieves data from secondary storage for use in main memory is called
a) fragmentation
b) paging
c) mapping
d) none of the mentioned

40. The address of a page table in memory is pointed by
a) stack pointer
b) page table base register
c) page register
d) program counter

SECTION B: ANSWER ALL QUESTIONS (40 MARKS)

QUESTION ONE IS COMPULSORY

Q1.

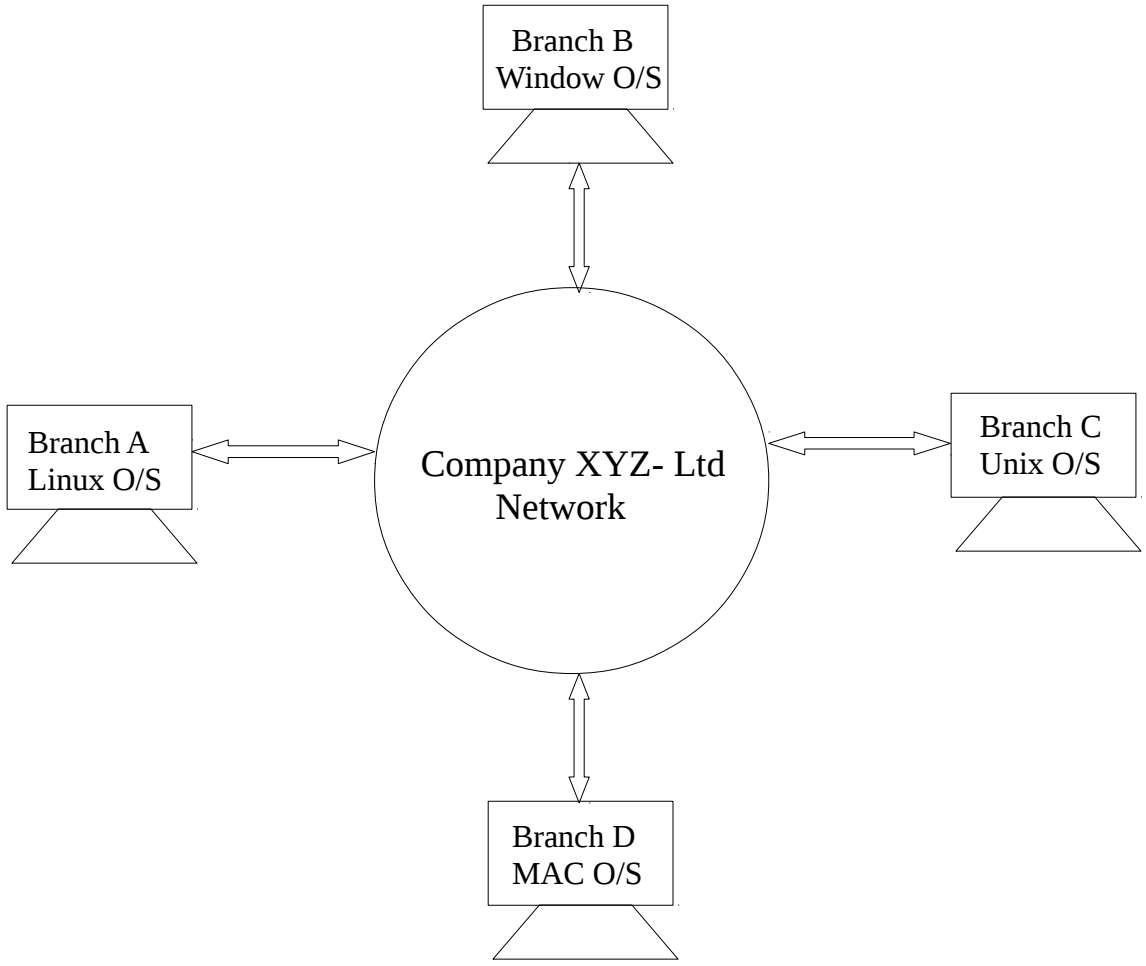

FIG. 1 Computer Network for Company XYZ- Ltd

a) Explain how it is possible for the computers installed in the four branches of Company XYZ- Ltd to communicate? (15 marks)

b) Sharing is a major motivation for computer networking. Yet sharing presents INSECURITIES. Discuss (15 marks)

Q2.

Produce a tabe comparing the scheduling policies listed below in terms of throughput, response time, overheads and starvation.

i) First Come First Serve

ii) Round Robin

iii) Shortest Response Time

iv) H R R N

v) Last In First Out (30 marks)