(6 Pages)

Reg. No. : .....

Code No. : 30382 E **Sub. Code : SMCS 61/ SMSE 61**

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2022

Sixth Semester

Computer Science/Software Engineering — Core

OPERATING SYSTEM

(For those who joined in July 2017 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The basic unit of computer storage is the ———— –

   (a) bit (b) byte

   (c) word (d) kilobyte

2. ———— is an example of an open-source bootstrap program for Linux system.

   (a) GRUB (b) SYSGEN

   (c) EPROM (d) ROM

3. A ———— is defined as an endpoint for communication.

   (a) Port (b) TCP

   (c) UDP (d) Socket

4. ———— scheduling dynamically assigns priorities according to deadline.

   (a) Priority based

   (b) Rate monotonic

   (c) Earliest deadline first

   (d) Proportional share

5. A classic software – based solution to the critical – section problem known as ————

   (a) Non preemptive kernels

   (b) Preemptive kernels

   (c) Peterson's solution

   (d) Locking

6. One lock-order verifier, which works on BSD versions of UNIX such as FreeBSD, is known as ————

   (a) Witness (b) Claim edge

   (c) Safe sequence (d) Wait-for

7. The percentage of times that the page number of interest is found in the TLB is called the ————

(a) Miss Ratio (b) Hit Ratio

(c) Valid Bit (d) Invalid Bit

8. We evaluate an algorithm by running it on a particular string of memory references and computing the number of page faults. The string of memory references is called a ————

(a) Reference string (b) Modify bit

(c) Victim frame (d) Pool

9. An ———— is a series of code sections that the loader can bring into memory and execute.

(a) Text file (b) Source file

(c) Executable file (d) Data file

10. To increase efficiency , most file systems group blocks together into larger chunks, frequently called ————

(a) BootStrap (b) Partition

(c) Clusters (d) Raw Disk

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Explain about the structure of operating system.

Or

(b) Write about system boot.

12. (a) Explain about scheduling queues.

Or

(b) Explain about multilevel queue scheduling.

13. (a) Explain about semaphore usage.

Or

(b) Write about resource preemption.

14. (a) Explain about logical versus physical address space.

Or

(b) Write short notes on page – fault frequency.

15. (a) Write short notes of directory implementation.

Or

(b) Write short notes on magnetic tapes.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain about operating system operation.

Or

(b) Explain about operation system design and implementation.

17. (a) Explain about communication in client – server systems.

Or

(b) Explain about thread scheduling.

18. (a) Explain about the readers – writers problem.

Or

(b) Explain about Banker's algorithm.

19. (a) Explain about paging hardware with TLB.

Or

(b) Consider the following page reference string :

7, 2, 3, 1, 2, 5, 3, 4, 6, 7, 7, 1, 0, 5, 4, 6, 2, 3, 0, 1.

Assuming demand paging with three frames, how many page faults would occur for the following replacement algorithms?

- LRU replacement
- FIFO replacement
- Optimal replacement.

20. (a) Explain about indexed allocation.

Or

(b) Explain about SCAN and C-SCAN scheduling.

———————