(7 pages) Reg. No. : .....

Code No. : 6179 **Sub. Code : WCAE 11**

M.C.A. (CBCS) DEGREE EXAMINATION, APRIL 2024

First Semester

Computer Application

Elective – ADVANCED OPERATING SYSTEMS

(For those who joined in July 2023 onwards)

Time : Three hours Maximum : 75 marks

PART A — (15 × 1 = 15 marks)

Answer ALL the questions.

Choose the correct answer :

1. What type of operating system is designed to respond to events within a specific time frame?
   (a) Embedded OS (b) Multi-User OS
   (c) Batch OS (d) Real-time OS

2. Which IPC mechanism is best suited for one-way communication, where one process sends data to another process without the need for a reply?
   (a) Shared memory (b) Message queues
   (c) Pipes (d) Socket

3. Which strategy involves terminating one or more processes to break a deadlock?
   (a) Deadlock avoidance
   (b) Deadlock recovery
   (c) Deadlock detection
   (d) Deadlock prevention

4. _____ protocol is often used in distributed operating systems for remote file access and manipulation?
   (a) NFS (Network File System)
   (b) FTP
   (c) HTTP
   (d) SMTP

5. Which of the following is not a goal of a distributed file system?
   (a) Data redundancy (b) Scalability
   (c) Transparency (d) Reliability

6. Which of the following is an example of a communication primitive for point-to-point communication in distributed systems?
   (a) Multicast
   (b) Broadcast
   (c) Send and receive
   (d) All-to-all communication

7. In a real-time operating system, what is the term for the maximum time it takes for a task to start executing after it is triggered?
   (a) Deadline (b) Response time
   (c) Execution time (d) Jitter

8. Which term describes the unpredictable variation in response times in a real-time system?
   (a) Latency (b) Throughput
   (c) Jitter (d) Deadline

9. Which application demands the highest level of precision and real-time response to ensure patient safety?
   (a) Video games
   (b) Medical equipment and devices
   (c) Social networking
   (d) Mobile apps for fitness tracking

10. What is the term for the process of loading an operating system onto a handheld device?
    (a) Booting (b) Synchronization
    (c) Downloading (d) Flashing

11. _____ of the following is not a well-known handheld operating system?
    (a) Android (b) iOS
    (c) Linux (d) Windows 11

12. What was the primary programming language used for Symbian OS application development?
    (a) Python (b) C++
    (c) Java (d) Ruby

13. In Linux, what is the root directory denoted by?
    (a) / (b) ~
    (c) * (d) !

14. Which operating system is commonly used on Apple's Phone and iPad devices?
    (a) Android (b) Windows
    (c) iOS (d) Linux

15. Which SDK is commonly used for developing mobile applications for the Android platform?
    (a) iOS SDK (b) Xcode
    (c) Android SDK (d) Windows SDK

PART B — (5 × 4 = 20 marks)

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

Each answer should not exceed 250 words.

16. (a) Write about Distributed system.

Or

(b) Explain about process scheduling.

17. (a) List the communication primitives commonly used in the context of a distributed Operating system.

Or

(b) What is the difference between Lamport's logical clock and vector clock?

18. (a) Discuss the characteristics of real time operating system.

Or

(b) What is relation between safety and reliability?

19. (a) What is handheld computer and its types?

Or

(b) List the features of Palm OS.

20. (a) What memory management techniques does Linux use?

Or

(b) How to set scheduling policy in Linux?

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

21. (a) Explain about Inter-process communication.

Or

(b) Describe about deadlock avoidance.

22. (a) Illustrate about distributed file systems.

Or

(b) Explain the issues in deadlock detection and resolution.

23. (a) Demonstrate the various application of real time systems.

Or

(b) Explain about real time task scheduling.

24. (a) Explain the architecture of the Android operating system.

Or

(b) Discuss the security mechanism used to provide security in handheld systems.

25. (a) Explain the architecture and the Software Development Kit (SDK) framework used in the Linux-based operating system.

Or

(b) How does the hierarchical structure of the Linux file system contribute to its organization and functionality? Explain.