QP CODE: 23501023

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Reg No : .....

Name : .....

I.M.C.A DEGREE EXAMINATION, NOVEMBER 2023

Fifth Semester

Integrated MCA

CORE - IMCA5C02 - OPERATING SYSTEMS

2020 Admission Onwards

E5652DC9

Time: 3 Hours Maximum: 75 Marks

Part A

*Answer any **ten** questions*

*Each question carries **3** marks*

1. Differentiate between Real-time and Time sharing OS.
2. What are the advantages of using Batch Operating System?
3. How does the protection mechanism in the operating system work?
4. Define Response time. Discuss the importance of response time as a scheduling criteria.
5. What is the difference between binary and counting semaphores?
6. What is busy waiting?
7. How does segmentation enable memory protection and sharing in multi-programming environments?
8. What is memory fragmentation, and how can it be categorized into internal and external fragmentation?
9. Differentiate Field,Record,Database in File systems.
10. How does access time in disk storage systems impact data retrieval speed and system performance.
11. Write a note on Bus topology with a neat diagram.

12. What are the core differences between the Android and iOS mobile operating systems in terms of architecture and design philosophy?

(10×3=30 marks)

Part B

*Answer **all** questions*

*Each question carries **9** marks*

13. a) Explain the monolithic design structure for an operating system.

OR

b) Explain the different types of system calls in an Operating System

14. a) Compare and contrast the Round Robin and First-Come-First-Serve (FCFS) scheduling algorithms. In what scenarios is each algorithm most suitable?

OR

b) Compare and contrast the different deadlock prevention and avoidance strategies.

15. a) Explain how paging may be implemented using Inverted page tables with a neat diagram.

OR

b) How does the combination of paging and segmentation in virtual memory enhance system performance and overcome the shortcomings of using either method in isolation?

16. a) Explain File System Structure with neat diagram

OR

b) Explain the purpose of secondary storage in a computer system and how it complements primary storage.

17. a) Discuss Communication Protocol with a neat diagram.

OR

b) Provide a comprehensive explanation of iOS, including its history, fundamental features, user interface design, and its importance within the Apple ecosystem, particularly in the context of iPhones and iPads

(5×9=45 marks)