**Code No.PC404AD**

**METHODIST COLLEGE OF ENGINEERING & TECHNOLOGY**

**(An Autonomous Institution)**

**B.E. (CSE/AI & DS) IV-Semester (AICTE) Regular Examination, AUGUST-2023**

**Subject: OPERATING SYSTEMS**

**Time: 3 hours Max.Marks:60**

**Note: Missing data, if any, maybe suitably assumed.**

**PART-A**

**Answer All the questions. (10X2M=20M)**

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| **Q.No.** | **Questions** | **Marks** | **CO** | **BTL** |
| **1. a** | Define Operating System, give two examples. | **2** | **CO1** | **BTL1** |
| **b** | What is Kernel? Write any two differences between Kernel and Shell. | **2** | **CO1** | **BTL1** |
| **c** | Define a Process. What are the various states of a Process? | **2** | **CO2** | **BTL1** |
| **d** | What is a multithread**.** | **2** | **CO2** | **BTL1** |
| **e** | What is a Semaphore. | **2** | **CO3** | **BTL1** |
| **f** | Explain “Starvation” in brief. | **2** | **CO3** | **BTL2** |
| **g** | What are Frames and Pages in memory management. | **2** | **CO4** | **BTL1** |
| **h** | What is locality of reference. | **2** | **CO4** | **BTL1** |
| **i** | List the advantages of Direct Memory Access. | **2** | **CO5** | **BTL2** |
| **J** | What is a process control Block? List it's contents. | **2** | **CO5** | **BTL1** |

**P.T.O**

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**PART-B**

**Answer Any Five questions**. **(5X8M=40M)**

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| **Q.No.** |  | **Questions** | **Marks** | **CO** | **BTL** |
| **2.** | **a** | Operating System is called as a Resource Manager. Justify the statement. | **4** | **CO1** | **BTL2** |
| **b** | Explain Microkernel Operating System | **4** | **CO1** | **BTL1** |
| **3.** | **a** | Differentiate Program and a Process. | **4** | **CO2** | **BTL2** |
| **b** | What is a Scheduler? Explain any two Schedulers with neat diagram. | **4** | **CO2** | **BTL2** |
| **4.** | **a** | What is IPC ? Explain Sockets and Pipes in brief | **4** | **CO3** | **BTL2** |
| **b** | What is Starvation? Differentiate deadlock and starvation? | 4 | **CO3** | **BTL1** |
| **5.** | **a** | Consider a reference string **2 1 5 3 4 2 5 2 1 2 7** and assume there are 3 frames in physical memory. Show the page replacement by FIFO page replacement algorithm. Calculate Hit ratio, Miss ratio and Number of page faults. | **4** | **CO4** | **BTL3** |
| **b** | What is the need of Page replacement? List various page replacement algorithms. | **4** | **CO4** | **BTL3** |
| **6.** | **a** | What is DMA? Draw & Explain its Architecture. | **4** | **CO5** | **BTL2** |
| **b** | Explain RAID Structure with its various levels. | **4** | **CO5** | **BTL2** |
| **7.** | **a** | Explain virtual machines with its characteristics and advantages. | **4** | **CO1** | **BTL2** |
| **b** | What is Context Switching? Explain with suitable example. | **4** | **CO2** | **BTL3** |
| **8.** | **a** | Consider a reference string **3 1 2 1 6 5 1 3** and assume there are 3 frames in physical memory. Show the page replacement by Optimal page replacement algorithm. Calculate Hit ratio, Miss ratio and Number of page faults. | **4** | **CO3** | **BTL3** |
| **b** | Explain fragmentation and its types with example. | **4** | **CO4** | **BTL2** |
| **9.** | **a** | Define Device Driver. Write any 4 differences between Device Driver and Device Controller. | **4** | **CO5** | **BTL2** |
| **b** | Explain Demand Paging with example? Write its advantages. | **4** | **CO4** | **BTL2** |

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