**Code No.PC404AD**

**METHODIST COLLEGE OF ENGINEERING & TECHNOLOGY**

**(An Autonomous Institution)**

**B.E. (CSE/AI & DS) IV-Semester (Supplementary) Examination, FEB-2024**

**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** | List the various services provided by the operating systems. | **2** | **CO1** | **BTL1** |
| **b** | Define a System Call. List any Five System Calls. | **2** | **CO1** | **BTL1** |
| **c** | List various components of a Process Control Block. | **2** | **CO2** | **BTL1** |
| **d** | Explain **“Safe State”** in brief | **2** | **CO2** | **BTL2** |
| **e** | State Critical Section Problem. | **2** | **CO3** | **BTL2** |
| **f** | What are the necessary condition for deadlock to occur. | 2 | **CO3** | **BTL1** |
| **g** | Define Page Table and list its contents. | 2 | **CO4** | **BTL1** |
| **h** | Write brief notes on Virtual Memory. | 2 | **CO4** | **BTL1** |
| **i** | Explain interrupts in brief. | 2 | **CO5** | **BTL** |
| **j** | What are tracks and sectors in the storage devices? | 2 | **CO5** | **BTL2** |

**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** | Describe Layered structure of Operating System in detail with the help of diagram? | **4** | **CO1** | **BTL1** |
| **b** | Briefly explain the concept of Virtual Machine | **4** | **CO1** | **BTL1** |
| **3.** | **a** | Explain different types of threads in detail. | **4** | **CO2** | **BTL2** |
| **b** | Explain **Priority Scheduling algorithm** in detail | **4** | **CO2** | **BTL2** |
| **4.** | **a** | Define IPC? Explain any two IPC Mechanisms with neat diagrams. | **4** | **CO3** | **BTL1** |
| **b** | What are the necessary conditions which can lead to a Deadlock situation in a System? | 4 | **CO3** | **BTL3** |
| **5.** | **a** | What is Segmentation? Explain with a neat diagram?  | **4** | **CO4** | **BTL2** |
| **b** | Define Thrashing? Propose a solution for thrashing? | **4** | **CO4** | **BTL3** |
| **6.** | **a** | What is an Interrupt? Explain various types of interrupts in OS. | **4** | **CO5** | **BTL2** |
| **b** | Explain disk scheduling algorithms in detail with suitable examples. | **4** | **CO5** | **BTL3** |
| **7.** | **a** | What is Microkernel? Explain its various services. | **4** | **CO1** | **BTL** |
| **b** | Explain Process Scheduler and its types. | **4** | **CO2** | **BTL2** |
| **8.** | **a** | Consider the following reference string **7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1** Find the number of Page Faults with LRU Page replacement with four free frames which are empty initially. | **4** | **CO3** | **BTL3** |
| **b** | What is Contiguous Memory Allocation ? Write its advantages and disadvantages. | **4** | **CO4** | **BTL2** |
| **9.** | **a** | Explain Directory Structure with example. | **4** | **CO5** | **BTL2** |
| **b** | Explain Peterson’s Solution. Justify with a code snippet. | **4** | **CO3** | **BTL3** |

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