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**KENYA METHODIST UNIVERSITY**

**END OF 2ND TRIMESTER 2019 [FT] EXAMINATION**

**SCHOOL : SCIENCE AND TECHNOLOGY**

**DEPARTMENT : COMPUTER SCIENCE AND BUSINESS INFORMATION**

**COURSE CODE : CISY 300 BBIT 213 DBIT 125 DCIS 201**

**COURSE TITLE : COMPUTER OPERATING SYSTEMS I**

**TIME : 2 HOURS**

**INSTRUCTIONS:**

* ***Answer Questions One and other Two Questions.***

**Question 1 [One]**

1. Explain the inconveniences that a user can face while interacting with a computer system, which is without an operating system. [3 Marks]
2. Explain the differences between multiprocessing system and multiprogramming systems. [4 Marks]
3. Explain any principles which must be considered while designing and implementing a system?

[8 Marks]

1. Explain the following memory allocation algorithms.
2. First Fit
3. Best fit
4. Worst fit [6 Marks]
5. **Explain any four types of hardware protections in aiding the operating system. [8** Marks]

**Question 2 [Two]**

1. **Explain the term memory fragmentation, and differentiate between internal and external fragmentation. [6** Marks]
2. **Explain any four necessary conditions for dead lock occurrence. [8** Marks]
3. **Differentiate between an interrupt and a trap, citing an example in each. [4** Marks]
4. Explain any two basic functions of operating system in main memory management. [2 Marks]

**Question 3 [Three]**

1. Describe two virtual memory page fetch policies. [4 Marks]
2. **Explain the concept of the Distributed systems and list two advantages of that system. [4** Marks]
3. **Explain what a long term scheduler & short term scheduler is. [4** Marks]
4. **Differentiate between pre-emptive and non-preemptive scheduling algorithms. [4** Marks]
5. **Explain four benefits of multithreaded programming applications. [4** Marks]

**Question 4 [Four]**

1. **Explain four basic functions of process management performed by operating system. [4 marks**
2. The Table below shows four process and their CPU burst times.

|  |  |  |
| --- | --- | --- |
| Process | Arrival time | CPU Burst |
| A | 0 | 20 |
| B | 1 | 5 |
| C | 2 | 15 |
| D | 3 | 10 |

1. Illustrate execution of the process using First come first served, shortest job first and the Round robin scheduling algorithm given that the time slice is 4 units.
2. Calculate the average waiting times and the average turnaround times. [8 Marks]
3. Define the following terms
4. **Kernel**
5. **Process synchronization [4** Marks]