

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)

Department of Computer Science and Engineering (CSE)

MID SEMESTER EXAMINATION

SUMMER SEMESTER, 2018-2019

DURATION: 1 Hour 30 Minutes

FULL MARKS: 75

CSE 4673: Operating System and System Programming

Programmable calculators are not allowed. Do not write anything on the question paper.

There are **4 (four)** questions. Answer any **3 (three)** of them.

Figures in the right margin indicate marks.

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|-------|---|-----|
| 1. a) | With the help of figures explain user-mode and kernel mode. | 10 |
| b) | Show what happens in the background when a standard C code contains call to a built-in function such as printf (). Include the entire process from the function call within the code to all the possible system calls that happens. | 10 |
| c) | What are the differences between a multicore and a multiprocessor system? | 5 |
| 2. a) | What are the differences between Virtualization and Emulation? Explain why one can use a Virtual machine when trying to use Linux in a Windows system but would have to use an emulator when they need to use Android in said Windows system. | 6 |
| b) | With figures show the various processes of interprocess communication. Also, differentiate between them. | 9 |
| c) | Write short notes on: | 5×2 |
| | i. Remote Procedure call | |
| | ii. Peer to peer architecture | |
| 3. a) | With figures describe the cloud computing architecture. | 9 |
| b) | With the help of queuing diagram show a representation of process scheduling. Also, justify when one might add a mid-term scheduler in process scheduling. | 12 |
| c) | What are ordinary pipes? Explain briefly with figures. | 4 |
| 4. a) | What is a process control block? Show the structure of a process control block. | 9 |
| b) | What is the producer-consumer problem? Write code snippets for the producer and consumer process when a bounded buffer is being used as a shared memory. | 10 |
| c) | Write the differences between direct and indirect communication. What is non-blocking send? | 4+2 |