

Faculty of Science and Technology  
Department of Computer Science and Technology  
300 level 2<sup>nd</sup> Semester Examination – Dec. - 2017/Jan. - 2018  
CST321-3 System Level Programming

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Part B

Number of questions: Three (03)

Mark allocation: 75



- 1.
- a. Explain the wrong practice used in the following code sample.
- ```
my_ptr = malloc(BLOCK_SIZE);  
.....  
my_ptr = realloc(my_ptr, BLOCK_SIZE * 10);
```
- (5 mark)
- b. Why is 'exec' function more efficient than the 'system' function? (5 mark)
- c. Briefly discuss the /proc file system in Linux. (5 mark)
- d. Write short descriptions on following functions. (5 mark)
- i. chmod
  - ii. chown
  - iii. chdir
  - iv. getcwd
  - v. symlink
- e. Briefly explain five (05) commands used in GNU debugger. (5 mark)
- 2.
- a. Briefly discuss four (04) advantages of Pthreads. (8 mark)
- b. How to accomplish synchronization between threads within the Pthreads API? (5 mark)
- c. While giving sample codes, explain the importance of 'mutex' in some programs when using Pthreads. (12 mark)
3. Write short answers for the following questions. (5 mark)
- a. What is meant by the file permission 764? (5 mark)
- b. What is the process related to the process ID 1 in Linux kernel? (5 mark)
- c. What is the purpose of waitpid() system call? (5 mark)
- d. Write a regular expression to select a plus sign followed by a digit at the beginning only of a line. (5 mark)
- e. What is meant by the -f input flag of the make command? (5 mark)