

<p align="center"><b>Philadelphia University</b>  <b>Faculty of Engineering</b>  <b>Department of Computer Engineering</b></p>		<p align="right"><b>Date:- 05/04/2016</b>  <b>Allowed time:- 60 minutes</b></p>
<p align="center"><b>Operating Systems (630422)      First Exam</b></p> <p><b>Student Name: - .....</b>      <b>ID: - .....</b></p>		

**Question 1: chose the correct answer for the following: 4 points**

- 1- Which of the following statements is incorrect?
- A) An operating system provides an environment for the execution of programs.
  - B) An operating system manages system resources.
  - C) Operating systems provide both command line as well as graphical user interfaces.
  - D) Operating systems must provide both protection and security.
- 2- The list of processes waiting for a particular I/O device is called a(n) \_\_\_\_.
- A) standby queue                      B) device queue                      C) ready queue                      D) interrupt queue
- 3- When a child process is created, which of the following is a possibility in terms of the execution or address space of the child process?
- A) The child process runs concurrently with the parent.
  - B) The child process has a new program loaded into it.
  - C) The child is a duplicate of the parent.
  - D) All of the above
- 4- In a(n) \_\_\_\_ temporary queue, the sender must always block until the recipient receives the message.
- A) zero capacity                      B) variable capacity                      C) bounded capacity                      D) unbounded capacity

**Question 2: Explain the rule of System Calls . 2 points.**

**Question 3: What is Process Control Block (PCB). 2 point**

**Question 4: What are the main characteristics of Micro Kernel system structure, and what is the main disadvantage of this model. 3 points**

**Question 5: What is the functionality of Core Dump file and crash dump file in operating system debugging. 2 points.**

**Question 6: If a process is in running state, what states it can move in to and when. 3 points.**

**Question 7: Using the programs bellow identify the output of the parent process and the output of the child process (Assume that the actual pid of the parent process is 2600 and the pid for child process is 2603, function getpid() return the current process pid.) 4 points**

<pre>#include &lt;sys/types.h&gt; #include &lt;iostream.h&gt; #include &lt;unistd.h&gt; int main() { Pid_t pid, pid1; pid = fork(); if (pid &lt; 0) {   cout&lt;&lt;"Fork Failed\n";     return 1; } else if (pid == 0) { execlp("/home/usr/p1", "p1", NULL); } else { execlp("/home/usr/p2", "p2", NULL); } } return 0; }</pre>	<pre>/home/usr/p1 #include &lt;sys/types.h&gt; #include &lt;iostream.h&gt; #include &lt;unistd.h&gt; int main() {     pid_t pid=getpid();     cout&lt;&lt;"pid="&lt;&lt;pid&lt;&lt;endl;     for(int i=0;i&lt;5;i++)         cout&lt;&lt;i&lt;&lt;" "; return 0; }  /home/usr/p2 #include &lt;sys/types.h&gt; #include &lt;iostream.h&gt; #include &lt;unistd.h&gt; int main() {     pid_t pid=getpid();     cout&lt;&lt;"pid="&lt;&lt;pid&lt;&lt;endl;     for(int i=4;i&gt;=0;i--)         cout&lt;&lt;i&lt;&lt;" "; return 0;} }</pre>
<p>Parent Process output</p>	<p>Child Process output</p>