EAST WEST UNIVERSITY BANGLADESH
Department of Computer Science & Engineering

CSE325: Operating System (1, 2)

Term I Examination **Fall 2015**

Total Marks: 25 Instructor: Dr. Md. Shamim Akhter Time: 90 minutes

1. Describe the difference between **mode switch** and **process/context switch**?

2. **Multi-programming** (or multi-tasking) enables more than a single process to apparently execute simultaneously. How is this achieved on a uniprocoessor?

3. Consider a system that has two CPUs. Suppose four programs, P0, P1, P2 and P3, are started with run times of 14, 11, 5 and 16 msec, respectively. Assume that all four programs are 100% CPU bound, do not block during execution, and do not change CPUs one assigned. Calculate the time taken to complete the execution of these programs with the following information:

   a) **Each CPU has two cores**.

   b) **Each CPU has one core**.

4. a) Write the difference between the following code snippets:

```
i)
int main()
{
  printf("Running ps with system\n");
  system("ps -ax &");
  printf("Done.\n");
  exit(0);
}
```

```
ii)
int main()
{
  printf("Running ps with execlp\n");
  execlp("ps", "ps","ax",0);
  printf("Done.\n");
  exit(0);
}
```

   b) Change the following code snippet to execute **execlp ( ) function** only inside child.

```
int main(){

   pid_t child_p;
   printf("Running ps with fork\n");

   child_p = fork();

   execlp("ps", "ps", "-ax", 0);
   return 0;
}
```

5. Explain the difference between **process and thread**. What are the advantages of using threads in implementing a complex application? What are the **unique components** that each thread has and does not share with other threads and/or processes?