BINGHAM UNIVERSITY
FACULTY OF SCIENCE AND TECHNOLOGY
COMPUTER SCIENCE DEPARTMENT
FIRST SEMESTER EXAMINATIONS, FEBRUARY, 2022
CMP321 - OPERATING SYSTEMS II
TIME ALLOWED: 2hours
ANSWER ANY THREE QUESTIONS

1. (a). What are the two main parts of a given Modern Operating System? Explain briefly their functions.
   (b). Give three (3) functions of an Operating System stating for each function two(2) important activities the Operating System is responsible for.
   (c). In the area of Operating systems distinguish among (i) Process (ii) Processing (iii) Processor **(20MKS)**

2. (a). Give and briefly describe five(5) process states.
   (b). When is a process said to be in a **blocked** state?
   (c). Under what conditions would a Process in the blocked state be taken back to a **Ready State?**
   (d). What is the function of the **ready queue?**
   (e). Briefly define a process table. Using example of four processes give the usual contents of a process table. Illustrate with a diagram. **(20MKS)**

3. (a). What is a Process Control Block?
   (b). Why is a PCB for each process necessary?
   (c). What is the main difference between a PCB and a Process table?
   (d). Give a well labeled diagram showing the contents of a Process Control Block.
   (e). Explain the contents of the PCB. **(20MKS)**

4. (a). The first step in processing an interrupt is called **context switching**. What does this mean?

   (b). (i) What is **scheduling**? (ii). Give the importance of scheduling in a **multitasking** environment.
   (ii). Some critical events must occur before the scheduler needs to step in and make a decision concerning the currently running process. State these events.
   (iii). Briefly describe a situation when a **scheduler** is said to be preemptive.
   (iv). Briefly describe a situation when a **scheduler** is said to be cooperative.
   (v). What is a major drawback of the cooperative scheduling? **(20MKS)**

5. (a). (i) Describe round robin scheduling. What is the parameter associated with this scheduling algorithm? What is the issue in choosing this parameter?

   (ii). Briefly describe any other two scheduling algorithms used in modern Operating systems.
   (b) (i) What is starvation? How can it be avoided?
   (ii) What is deadlock? How can it be prevented? **(20MKS)**

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300 LEVEL
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Answer question number 1 and any 2 other questions.

1. (a). What is a Process?
   (b). What is a process table?
   (c). Give an example of a process table with its main contents.
   (d) What is process state? Draw and Explain state transition Diagram. Give the meaning of each state.
   (e) i. What is an interrupt?
   ii. Why is an interrupt necessary for the successful operation of an operating system/?
   Iii Describe its application by an operating system.

2. (a). Give 3 functions of an operating system
   (b). For each of the functions give 2 activities the operating system is responsible for.

3. Distinguish among Batch processing, Multiprocessing and Multitasking using relevant examples to explain your answer.

4. (a). What is scheduling?
   (b). When is a scheduler said to be preemptive?
   (b). When is a scheduler said to be preemptive?
   (b). When is a scheduler said to be cooperative?
   (c). Give 4 events that may occur before the scheduler steps into action.
   (d). Describe briefly 4 scheduling algorithms giving one advantage and one demerit of each.

5. (a). What is starvation? How can it be avoided?
   (b). What is deadlock? How can it be prevented?
   (c). Give briefly your understanding of the following
   i. Throughput
   ii. Response time
   iii. Turn-around time
   iv. System call