

**NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**FACULTY OF APPLIED SCIENCE**  
**COMPUTER SCIENCE DEPARTMENT**  
**DECEMBER EXAMINATIONS 2001**

**SUBJECT:** OPERATING SYSTEMS CONCEPTS  
**CODE:** SCS 1103

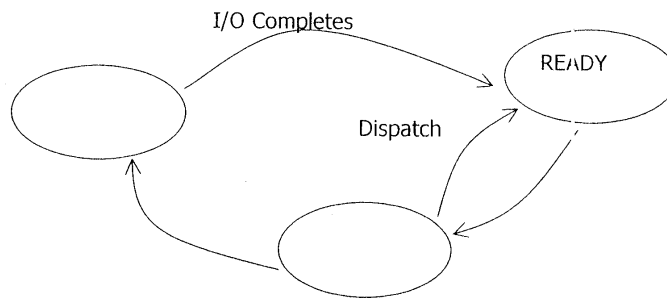
**INSTRUCTION TO CANDIDATES**

This paper consists of seven (7) questions  
Answer any five (5) questions.

**Time: 3 hours**

**QUESTION ONE**

- a) What are the three main purposes of an operating system? [3]
- b) List the four steps that are necessary to run a program on a dedicated machine. [4]
- c) Explain the concept of a process. [6]
- d) Complete the following process state transition diagram.



[7]

**QUESTION TWO**

- a) List five functions a real-time executive performs. [5]

- b) What is co-operative switching and how does it differ from pre-emptive switching? [10]
- c) i) What is the maximum size of conventional memory used by MSDOS?  
ii) What does the MSDOS PATH variable specify?  
iii) What is the command to format an MSDOS system diskette?  
iv) Windows 95/98 are essentially multi-user operating systems. TRUE OR FALSE  
v) A monitor is an example of an input device. TRUE OR FALSE. [5]

### **QUESTION THREE**

- a) What are the four major resources managed by an operating system? Explain any two of them in detail. [12]
- b) Briefly explain the bootstrap process. [4]
- c) Briefly explain how the batch operating system works. [4]

### **QUESTION FOUR**

- a) What is a file control block (FCB). How does it differ from a process control block (PCB)? [10]
- b) List five operations that are associated with files. [5]
- c) With the aid of an example explain the root file system. [5]

### **QUESTION FIVE**

- a) Explain the main features of a windows based operating system. [8]
- b) Explain the terms:  
i) thread  
ii) semaphore  
iii) time slice  
iv) critical section [4]
- c) With the aid of an example, explain the difference between a compiler and an interpreter. [8]

**QUESTION SIX**

- a) Explain the different types of scheduling methods. [10]
- b) Show how you may create an MSDOS batch file to output on the command line "I am very clever" twice. [5]
- c) What is a virtual machine? [5]

**QUESTION SEVEN**

- a) Describe the various types of memory management schemes. Write the advantages and disadvantages of continuous memory allocation over partitioned memory allocation. [10]
- b) What is a bus? Explain, using a diagram, single bus structure and multi bus structure. [10]

**END OF QUESTION PAPER**

GOOD LUCK!