No. of Printed Pages : **8**

A6-R5 : Computer Organization and Operating System

DURATION : 03 Hours **MAXIMUM MARKS : 100**

OMR Sheet No. :						

Roll No. : | | | | | | |

Answer Sheet No. : | | | | | | |

Name of Candidate : _____ **; Signature of Candidate :** _____

INSTRUCTIONS FOR CANDIDATES :

- Carefully read the instructions given on Question Paper, OMR Sheet and Answer Sheet.
- Question Paper is in English language. Candidate has to answer in English language only.
- There are **TWO PARTS** in this Module/Paper. **PART ONE** contains **FOUR** questions and **PART TWO** contains **FIVE** questions.
- **PART ONE** is Objective type and carries **40** Marks. **PART TWO** is Subjective type and carries **60** Marks.
- **PART ONE** is to be answered in the **OMR ANSWER SHEET** only, supplied with the question paper, as per the instructions contained therein. **PART ONE** is **NOT** to be answered in the answer book for **PART TWO**.
- Maximum time allotted for **PART ONE** is **ONE HOUR**. Answer book for **PART TWO** will be supplied at the table when the Answer Sheet for **PART ONE** is returned. However, Candidates who complete **PART ONE** earlier than one hour, can collect the answer book for **PART TWO** immediately after handing over the Answer Sheet for **PART ONE** to the Invigilator.
- **Candidate cannot leave the examination hall/room without signing on the attendance sheet and handing over his/her Answer Sheet to the invigilator. Failing in doing so, will amount to disqualification of Candidate in this Module/Paper.**
- After receiving the instruction to open the booklet and before answering the questions, the candidate should ensure that the Question Booklet is complete in all respects.

DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.

PART ONE

(Answer the **all** the questions. Each question carries **ONE** mark)

1. Each question below gives a multiple choice of answers. Choose the most appropriate one and enter in the "OMR" answer sheet supplied with the question paper, following instructions therein. **(1x10)**

1.1 The simplified SOP (Sum Of Product) form of the boolean expression

(P+Q′+R′)·(P+Q′+R)·(P+Q+R′) is :

(A) (P′·Q+R′)

(B) (P+Q′·R′)

(C) (P′·Q+R)

(D) (P.Q+R)

1.2 What is Octal equivalent to the binary number 10111101 ?

(A) 275

(B) 675

(C) 572

(D) 573

1.3 Which addressing mode is used for the Push and Pop instructions in stack ?

(A) Auto Index Mode

(B) Direct Addressing Mode

(C) Register addressing Mode

(D) Indexed addressing Mode

1.4 The timing signals for data trasnfers is given by :

(A) Memory

(B) Control Unit

(C) ALU

(D) i/o devices

1.5 The amount of data that can be simultaniously transferred between the processor and memory is given by the :

(A) Processor Size

(B) Comoputer Size

(C) Bus Size

(D) Memory Size

1.6 Speedup techniques of a computer include :

(A) Cache

(B) Pipelining

(C) Superscalar

(D) All of above

1.7 The operating system manages :

(A) Memory

(B) Processes

(C) Disks and I/O devices

(D) All of the above

1.8 Virtual Memory is :

(A) Extremely Large Main memory

(B) Extremely Large Secondary memory

(C) An illusion of extremely large main memory

(D) An illusion of extremely large secondary memory

1.9 What are the two types of Semaphore ?

(A) Digital Semaphores and Binary Semaphores

(B) Analog Semaphores and Octal Semaphores

(C) Counting Semaphores and Binary Semaphores

(D) Critical Semaphores and System Semaphores

1.10 Which of the following is a real-time Operating system ?

(A) Windows NT

(B) DOS

(C) Windows XP

(D) RTLinux

2. Each statement below is either TRUE or FALSE. Choose the most appropriate one and enter your choice in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)

2.1 Accumulator register points to the first instruction to be executed when the processor starts.

2.2 A file structure should be according to a required format that the operating system can understand.

2.3 A data bus is bidirectional.

2.4 A machine cycle is the series of operations required to process a single machine instruction.

2.5 Secondary storage is sometimes contained in the CPU.

2.6 Virtual memory is usually considerably smaller than RAM.

2.7 An LRU replacement policy will always be better than a random replacement policy for managing virtual memory pages.

2.8 Linux is a multi-user operating system.

2.9 Making no assumptions about the processes being scheduled, Round Robin scheduling algorithm will prevent starvation.

2.10 Increasing the size of physical memory is not a solution to thrashing.

3. **Match words and phrases in column X with the closest related meaning / words(s) / phrase(s) in column Y. Enter your selection in the "OMR" answer sheet supplied with the question paper, following instructions therein.** **(1x10)**

	X		Y
3.1	Large scale numerical calculations	**A**	Operating System
3.2	Signed representation	**B**	Job scheduler
3.3	Linux	**C**	Super computers
3.4	Banker's algorithm	**D**	2's complement
3.5	Restarting computer	**E**	CPU scheduler
3.6	Belady's Anomaly	**F**	Page Replacement
3.7	Multitasking	**G**	Windows NT
3.8	Simultaneous peripheral operations	**H**	Deadlock prevention
3.9	Long term scheduler	**I**	Spooling
3.10	Short term scheduler	**J**	Booting
		K	Direct Addressing Mode
		L	Bus
		M	Thrashing

4. Each statement below has a blank space to fit one of the word(s) or phrase(s) in the list below. Choose the most appropriate option, enter your choice in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)

A.	Program Counter	**B.**	Process	**C.**	Hard drive	**D.**	CPU
E.	Random access memory	**F.**	Multitasking	**G.**	Read	**H.**	DOS
I.	ALU	**J.**	System Software	**K.**	FIFO	**L.**	Accumulator
M.	Write						

4.1 _____ is considered as the brain of the computer.

4.2 Memory in which any location can be reached in a short and fixed amount of time after specifying its address is called _____.

4.3 _____ register gives the address to MAR for fetching the instruction.

4.4 _____ control signal is enabled by the control unit when fetching the instruction.

4.5 _____ is an operating system.

4.6 Operating system is a _____.

4.7 A program in execution is called _____.

4.8 The longer the time slice, the more a RR scheduler gives similar results to a _____ scheduler.

4.9 Virtual memory is typically located on _____.

4.10 _____ Operating Systems are also known as Time-sharing systems.

PART TWO

(Answer any **FOUR** questions)

5. (a) What are the different types of registers used in basic computer ? Discuss their functions.

(b) What do you understand by Opcode and operand in Addressing mode. Explain different addressing modes.

(8+7)

6. (a) Discuss the FIFO page replacement algorithms used in OS. What is Belady's anomaly ?

(b) What is Interrupt service routine (ISR) ?

(8+7)

7. (a) Through example, explain the process of redirecting output to a file.

(b) In context of Linux OS, discuss about various basic file permissions like permission groups, permission types and viewing the permissions.

(6+9)

8. (a) Explain the basics of Linux file system.

(b) What is the difference between Process and Thread ?

(8+7)

9. (a) What are file descriptors in Linux ?

(b) What are Kernel and Shell in Unix OS ?

(8+7)

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SPACE FOR ROUGH WORK

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