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 What is the symbolic representation of this numeric permission : 644 ?

(A) r--rw-rw-

(B) rw-------

(C) rw-r--r--

(D) rwxr-xr-x

1.2 Which of the following options lists all the seven fields of the </etc/passwd> file in the correct order ?

(A) Username, UID, GID, comment, home directory, command.

(B) UID, username, GID, home directory, comment, command.

(C) Username, UID, group name, GID, home directory, comment.

(D) Username, UID, GID, home directory, command, comment.

1.3 Select the command to list older files first and newer ones last.

(A) ls -dt

(B) ls /o-d

(C) ls -od

(D) ls -rt

1.4 The process of division on memory spaces is called _____.

(A) Paging

(B) Segmentation

(C) Bifurcation

(D) Dynamic Division

1.5 Most computers use the _____ representation when performing arithmetic operations with integers.

(A) signed-magnitude

(B) signed-1's complement

(C) signed-2's complement

(D) any of the above

1.6 The ALU gives the output of the operations and the output is stored in the _____.

(A) Memory Devices

(B) Registers

(C) Flags

(D) Output Unit

1.7 What characteristic of RAM memory makes it not suitable for permanent storage ?

(A) too slow

(B) unreliable

(C) it is volatile

(D) too bulky

1.8 A given memory chip has 12 address pins and 4 data pins. It has the following number of locations.

(A) 2^4

(B) 2^{12}

(C) 2^{48}

(D) 2^{16}

1.9 Two's complement notation is frequently used for internal representation of :

(A) fractions

(B) integers

(C) True and False values

(D) floating point numbers

1.10 Floating point representation is used to store :

(A) Boolean values

(B) whole numbers

(C) real numbers

(D) integers

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 A "word" is the natural unit of organization of memory. Different computer types may have different word lengths (in bits).

2.2 Registers contain data and instructions needed by the CPU.

2.3 The fetch-decode-execute cycle refers to the process by which data is read from the hard drive and stored in memory.

2.4 The >> symbol is used to overwrite the existing file if it exists.

2.5 Redirection is a process of switching of the standard stream of data.

2.6 /etc/passwd files defines all users on a Linux system.

2.7 The fastest and most flexible cache organization uses an associative memory.

2.8 The dmesg file is a system file that is written on the system boot.

2.9 Control words are represented using decimal numbers.

2.10 Binary coded decimal representation is same as binary equivalent of a decimal number.

3. Match words and phrases in column X with the closest related meaning / word(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	Register carries the address of next instruction to be executed	**A**	Addressing mode
3.2	Cache memory mapping technique	**B**	Program counter
3.3	This signal is used during asynchronous communication	**C**	Redirection
3.4	Process scheduling can be performed using	**D**	Pipe
3.5	Use between a command and a file	**E**	Hamming Code
3.6	Binary number 1011 is equivalent to octal	**F**	Scheduler
3.7	Combinational circuit	**G**	13
3.8	Direct, indirect and relative are	**H**	Associative
3.9	Error detecting and correcting code	**I**	half adder
3.10	Fork()	**J**	strobe
		K	54
		L	Instruction register
		M	Used to create new process

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

A.	High impedance	**B.**	Shell	**C.**	Start and stop bits	**D.**	Locality of reference
E.	Internal	**F.**	bidirectional	**G.**	Accumulator	**H.**	Peripheral
I.	uname	**J.**	Interrupts	**K.**	ps	**L.**	unidirectional
M.	bin						

4.1 A tri-state buffer has an additional state _____.

4.2 On completion of the execute cycle, a test is made to determine whether any enabled _____ have occurred.

4.3 _____ directory contains executable files for most of the UNIX commands.

4.4 _____ works as a command interpreter.

4.5 _____ commands execute directly on shell and they do not need separate process.

4.6 The computer needs additional components called _____ to accomplish its input, output and storage functions.

4.7 Cache memory works on the principle of _____.

4.8 _____ command is used to display the characteristics of a process.

4.9 _____ used in serial communication.

4.10 Address bus is _____ in nature.

PART TWO

(Answer any FOUR questions)

5. (A) Explain one, two and three address instruction.

(B) Define the following terms :

(i) Effective address

(ii) Immediate instruction

(C) Define access time, seek time and latency time.

(D) Differentiate between SRAM and DRAM. **(3+3+3+6)**

6. (A) What are the components of the Linux system ?

(B) Explain the features of the Linux system ?

(C) Why is Linux regarded as a more secure operating system than other operating systems ? **(5+5+5)**

7. (A) Explain various file permissions in Linux ?

(B) What information does a Process Control Block (PCB) contain and how does the PCB facilitate context switching ?

(C) What do you know about Linux Shell and its types ? **(5+5+5)**

8. (A) A computer uses a memory unit with 256K words of 32 bits each. A binary instruction code is stored in one word of memory. The instruction has four parts : an indirect bit, an operation code, a register code part to specify one of 64 registers, and an address part.

(a) How many bits are there in the operation code, the register code part, and the address part ?

(b) Draw the instruction word format and indicate the number of bits in each part.

(c) How many bits are there in the data and address inputs of the memory ?

(B) How do you locate files within a directory or its subdirectories ? How does the find command interact with file permissions ? In what ways can you utilize access times when searching for files with find ? Explain with a suitable example. **(8+7)**

9. (A) Draw and explain 4-bit adder-subtractor circuit.

(B) Explain any two addressing mode with suitable example. **(8+7)**

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SPACE FOR ROUGH WORK

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