

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 **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 the instructions therein. (1x10)

1.1 The SRAM's are basically used as _____.

- (A) Registers
- (B) Caches
- (C) TLB
- (D) Buffer

1.2 While using the iterative construct (Branching) in execution, _____ instruction is used to check the condition.

- (A) TestAndSet
- (B) Branch
- (C) TestCondn
- (D) None of the above

1.3 ISP stands for,

- (A) Instruction Set Processor
- (B) Information Standard Processing
- (C) Interchange Standard Protocol
- (D) Interrupt Service Procedure

1.4 Each stage in pipelining should be completed within _____ cycle.

- (A) 1
- (B) 2
- (C) 3
- (D) 4

1.5 _____ is used to store data in registers.

- (A) D flip flop
- (B) JK flip flop
- (C) RS flip flop
- (D) None of these

1.6 The interval from the time of submission of a process to the time of completion is termed as _____.

- (A) Response time
- (B) Throughput
- (C) Waiting time
- (D) Turnaround time

1.7 The Linux command used to change the permission of files is :

- (A) Chgrp
- (B) Cgrp
- (C) Chmod
- (D) Chngfile

1.8 First-In-First-Out (FIFO) scheduling is :

- (A) Pre-emptive Scheduling
- (B) Deadline Scheduling
- (C) Non-pre-emptive Scheduling
- (D) Fair Share Scheduling

1.9 Which of the following are CPU scheduling algorithms ?

- (A) Round Robin
- (B) Priority Scheduling
- (C) Shortest Job First
- (D) All of the above

1.10 A systematic procedure for moving the CPU to new process is known as :

- (A) Synchronisation
- (B) Deadlock
- (C) Starvation
- (D) Context Switching

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

- 2.1** PC holds the address of the data which is to be executed next.
- 2.2** Control bus is a group of lines used for the purpose of data flow.
- 2.3** ROM is a volatile memory.
- 2.4** $1011-1001-1001 = -0011$.
- 2.5** EEPROM is the type of memory that can be erased with the electric discharge.
- 2.6** Main Memory of a computer system is Non-volatile.
- 2.7** Demand paging is a technique used in virtual memory systems where pages enter the main memory only when requested or needed by the CPU.
- 2.8** getpid() system call never returns an error message in linux operating systems.
- 2.9** Atomic operations are interruptible units.
- 2.10** Multiprogramming is an ability of an operating system to execute more than one program using a single processor machine.

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 the instructions therein. (1x10)

X		Y	
3.1	SIMD stands for	A	Local address
3.2	Cycle stealing is/are used in which concept ?	B	cpio
3.3	What is the purpose of the Floating Point Unit (FPU) ?	C	Time sharing operating system
3.4	Parity bits are used to	D	4
3.5	What is the equivalent in hexadecimal for the decimal number 973 ?	E	Disk Scheduling
3.6	To access the services of operating system the interface is provided by the	F	3CD
3.7	Allows users to use one system with two different terminals	G	Zombie
3.8	Process that waste system resources	H	Single instruction multiple data
3.9	System call that creates new process in Linux	I	System Calls
3.10	Command is used to process archive files	J	Detect errors
		K	DMA
		L	fork
		M	Makes some arithmetic calculations faster

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.	Frames	B.	Speed up memory access	C.	A	D.	Nibble
E.	Primary Storage	F.	more	G.	Memory Manager	H.	DMA
I.	Encoder	J.	Complimentary subtraction	K.	Binary micro program	L.	Process Identifier
M.	Get						

- 4.1 A group of 4 bits is called _____.
- 4.2 If 2 NAND gates are connected in series A is the input then the output is _____.
- 4.3 _____ is a digital circuit that converts information into coded form.
- 4.4 The method of subtraction by an addition approach is known as _____.
- 4.5 The tape is divided into vertical columns called _____.
- 4.6 In Linux, each process is identified by its _____.
- 4.7 The method which offers higher speeds of I/O transfers _____.
- 4.8 Cache memory is used in a computer system to _____.
- 4.9 Manage operations between main memory and disk during process execution _____.
- 4.10 _____ Command reads files and displays the text one screen at a time.

PART TWO

(Answer any FOUR questions)

5. (a) Differentiate between Programmed Driven I/O and Interrupt Driven I/O.
- (b) Explain briefly the structure and importance of the Memory Address Map in computer systems, including how physical and virtual addresses are mapped. (8+7)
6. (a) (i) Convert the decimal number 56.75 into its binary and floating-point representations.
- (ii) Perform the subtraction of $1010-1101$ _____ using 2's complement method and explain the steps.
- (b) Explain the Working of a parallel Adder/ Subtractor Circuit. (7+8)
7. (a) What are the benefits of multithreaded programming ? Compare user threads and kernel threads.
- (b) Compare and contrast **direct addressing mode** and **indirect addressing mode**. Provide examples of how these addressing modes are used in executing instructions.
- (c) What is foreground and background processes in Linux ? Explain with examples. How can you switch between Foreground and Background Processes ?
- (5+5+5)

8. (a) What are the three permission groups in Linux ? Briefly explain each.
- (b) What are the Key roles of pipes in Linux ? Name the types of pipes and their uses. (7+8)
9. (a) Briefly discuss **Inode** and its features in Linux Operating Systems.
- (b) What is shell scripting of Linux ? Briefly explain its Basic structure, Key components, and common use cases. (7+8)

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SPACE FOR ROUGH WORK

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