

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 respect.

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

PART ONE

(Answer all 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 Which of the following micro operations transfer binary information from one register to another ?

- (A) Register transfer micro operations
- (B) Arithmetic micro operations
- (C) Logic micro operations
- (D) Shift micro operations

1.2 Which of the following is not a form of memory ?

- (A) Instruction cache
- (B) Instruction register
- (C) Instruction opcode
- (D) Both (A) and (B)

1.3 Which memory is difficult to interface with processor ?

- (A) Static memory
- (B) Dynamic memory
- (C) ROM
- (D) None of these

1.4 With a single resource, deadlock occurs :

- (A) if there are more than two processes competing for that resource
- (B) if there are only two processes competing for that resource
- (C) if there is a single process competing for that resource
- (D) none of these

1.5 A system has 3 processes sharing 4 resources. If each process needs a maximum of 2 units, then :

- (A) deadlock can never occur
- (B) deadlock may occur
- (C) deadlock has to occur
- (D) none of these

1.6 Desirable characteristic(s) of a memory system is (are) :

- (A) Speed and reliability
- (B) Low power consumption
- (C) Durability and compactness
- (D) All of these

1.7 The time required for a gate or inverter to change its state is called :

- (A) Rise time
- (B) Decay time
- (C) Propagation time
- (D) Charging time

- 1.8 What is the minimum number of two-input NAND gates used to perform the function of two input OR gate ?
- (A) one
- (B) two
- (C) three
- (D) four
- 1.9 The digital multiplexer is basically a combination logic circuit to perform the operation :
- (A) AND-AND
- (B) OR-OR
- (C) AND-OR
- (D) OR-AND
- 1.10 A toggle operation cannot be performed using a single :
- (A) NOR gate
- (B) AND gate
- (C) NAND gate
- (D) XOR gate
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 The portion of the process scheduler in an operating system that dispatches processes is concerned with assigning ready processes to CPU.
- 2.2 Complex scheduling algorithms are very appropriate for very large computers.
- 2.3 Scheduling is done so as to decrease CPU utilization.
- 2.4 Process are classified into different groups in priority scheduling algorithm.
- 2.5 User level thread cannot be scheduled by the kernel.
- 2.6 IBM stands for International Business Machines.
- 2.7 A NOT gate is also known as Invertors.
- 2.8 The time required to position the head over the proper track is called Seek time.
- 2.9 Carry in a half adder can be obtained using AND gate.
- 2.10 Accumulator is a general purpose processing register.

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	IOP	A	Command Line Interface
3.2	DMA	B	Compaction
3.3	Time sharing	C	Direct Memory Access
3.4	CLI	D	Bootstrap Loader
3.5	System Programs	E	File Manipulation
3.6	UNIX OS	F	Memory management unit
3.7	System BOOT	G	Input Output Processor
3.8	MMU	H	Multitasking
3.9	Dynamic Linking	I	System Program, kernel
3.10	Internal Fragmentation	J	Shared Libraries
		K	File Handling
		L	CPU
		M	Main Memory

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.	Bus	B.	Object Linking and Embedding	C.	Universal gate
D.	Dynamic RAM	E.	First-come, first-served scheduling	F.	Extended binary Coded Decimal interchanges Code
G.	Multiprogramming	H.	Dispatcher	I.	Turn around time
J.	Preemptive scheduling	K.	Write miss	L.	Sorting
M.	Sequential				

- 4.1 The full form of EBCDIC is _____.
- 4.2 The communication line between the CPU, memory and other devices is called _____.
- 4.3 The full form of OLE is _____.
- 4.4 NAND and NOR are called _____.
- 4.5 A system that processes two or more program is called _____.
- 4.6 A memory that requires refreshing of the data is _____.
- 4.7 During a write operation if the required block is not present in the cache then _____ occurs.
- 4.8 _____ Module gives control of the CPU to the process selected by the short-term scheduler.
- 4.9 The interval from the time of submission of a process to the time of completion is termed as _____.
- 4.10 Round robin scheduling falls under the category of _____.

PART TWO

(Answer any FOUR questions)

5. (a) What is virtual memory ?
- (b) Show the conversion of decimal 41.6875 into binary.
- (c) What is Asynchronous data transfer ?
(5+5+5)
6. (a) Explain RISC and its characteristics.
- (b) Explain the various addressing modes used.
- (c) Explain the control operation of DMA.
(4+5+6)
7. (a) What is Cache memory ? Explain various types of mapping.
- (b) What do you mean by Page replacement ? Explain any one page replacement algorithm with suitable example.
(7+8)
8. (a) Explain the various types of interrupts.
- (b) Explain RAID and its types.
(7+8)

9. (a) What is preemptive multitasking ? Why partitioning and formatting is a prerequisite to install an operating system ?
- (b) What is Associative memory ? Explain its hardware organization ?
(8+7)

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SPACE FOR ROUGH WORK

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