A6-R5 : COMPUTER ORGANIZATION AND OPERATING SYSTEM

अवधि : 03 घंटे **अधिकतम अंक : 100**
DURATION : 03 Hours **MAXIMUM MARKS : 100**

ओएमआर शीट सं. : **OMR Sheet No. :**						

रोल नं. : **Roll No. :** | | | | | | |

उत्तर-पुस्तिका सं. : **Answer Sheet No. :** | | | | | | |

परीक्षार्थी का नाम : **परीक्षार्थी के हस्ताक्षर :**
Name of Candidate : _____ **Signature of Candidate :** _____

परीक्षार्थियों के लिए निर्देश :	**Instructions for Candidate :**
कृपया प्रश्न-पुस्तिका, ओएमआर शीट एवं उत्तर-पुस्तिका में दिये गए निर्देशों को ध्यानपूर्वक पढ़ें।	Carefully read the instructions given on Question Paper, OMR Sheet and Answer Sheet.
प्रश्न-पुस्तिका की भाषा अंग्रेजी है। परीक्षार्थी केवल अंग्रेजी भाषा में ही उत्तर दे सकता है।	Question Paper is in English language. Candidate can answer in English language only.
इस मॉड्यूल/पेपर के **दो भाग** हैं। **भाग एक** में **चार** प्रश्न और **भाग दो** में **पाँच** प्रश्न हैं।	There are **TWO PARTS** in this Module/Paper. **PART ONE** contains **FOUR** questions and **PART TWO** contains **FIVE** questions.
भाग एक ''वैकल्पिक'' प्रकार का है जिसके कुल अंक 40 है तथा **भाग दो** ''व्यक्तिपरक'' प्रकार का है और इसके कुल अंक 60 है।	**PART ONE** is Objective type and carries 40 Marks. **PART TWO** is Subjective type and carries 60 Marks.
भाग एक के उत्तर, **ओएमआर उत्तर-पुस्तिका** पर ही दिये जाने हैं। **भाग दो** की उत्तर-पुस्तिका में **भाग एक** के उत्तर **नहीं** दिये जाने चाहिए।	**PART ONE** is to be answered in the **OMR ANSWER SHEET** only. **PART ONE** is **NOT** to be answered in the answer book for **PART TWO**.
भाग एक के लिए अधिकतम समय सीमा **एक घण्टा** निर्धारित की गई है। **भाग दो** की उत्तर-पुस्तिका, **भाग एक** की उत्तर-पुस्तिका जमा कराने के पश्चात् दी जाएगी। तथापि, निर्धारित एक घंटे से पहले **भाग एक** पूरा करने वाले परीक्षार्थी **भाग एक** की उत्तर-पुस्तिका निरीक्षक को सौंपने के तुरंत बाद, **भाग दो** की उत्तर-पुस्तिका ले सकते हैं।	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.
परीक्षार्थी, उपस्थिति-पत्रिका पर हस्ताक्षर किए बिना और अपनी उत्तर-पुस्तिका, निरीक्षक को सौंपे बिना, परीक्षा हॉल/कमरा नहीं छोड़ सकते हैं। ऐसा नहीं करने पर, परीक्षार्थी को इस मॉड्यूल/पेपर में अयोग्य घोषित कर दिया जाएगा।	**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.**
प्रश्न-पुस्तिका को खोलने के निर्देश मिलने के पश्चात् एवं उत्तर लिखना आरम्भ करने से पहले उम्मीदवार जाँच कर यह सुनिश्चित कर लें कि प्रश्न-पुस्तिका प्रत्येक दृष्टि से संपूर्ण है।	After receiving the instruction to open the booklet and before starting to answer the questions, the candidate should ensure that the Question Booklet is complete in all respect.

जब तक आपसे कहा न जाए, तब तक प्रश्न-पुस्तिका न खोलें।
DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.

PART ONE

(Answer all the questions)

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 8-bit encoding format used to store data in a computer is _____.

(A) ASCII

(B) EBCDIC

(C) ANCI

(D) USCII

1.2 Which memory device is generally made of semiconductors ?

(A) RAM

(B) Hard-disk

(C) Floppy disk

(D) Cd disk

1.3 To extend the connectivity of the processor bus we use _____.

(A) PCI bus

(B) SCSI bus

(C) Controllers

(D) Multiple bus

1.4 The internal components of the processor are connected by _____.

(A) Processor intra-connectivity circuitry

(B) Processor bus

(C) Memory bus

(D) Ram bus

1.5 _____ translates the logical address into a physical address.

(A) MMU

(B) Translator

(C) Compiler

(D) Linker

1.6 The method of synchronising the processor with the I/O device in which the device sends a signal when it is ready is :

(A) Exceptions

(B) Signal handling

(C) Interrupts

(D) DMA

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

(A) waiting time

(B) turnaround time

(C) response time

(D) throughput

1.8 Which command is used to display the unix version ?

(A) uname-r

(B) uname-n

(C) uname-t

(D) kernel

1.9 Which command changes a file's group owner ?

(A) cgrp

(B) chgrp

(C) change

(D) group

1.10 A parent process calling _____ system call will be suspended until children processes terminate.

(A) wait

(B) fork

(C) exit

(D) exec

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 command given to the computer is called instruction.

2.2 Control bus is a group of lines used for the purpose of data flow.

2.3 The basic circuit for storing information in a digital machine is called flip-flop.

2.4 Implicit addressing is also called inherent addressing.

2.5 By operating system, the resource management can be done via time and space division multiplexing.

2.6 In immediate addressing mode data is provided in the instruction itself.

2.7 The memory mapped I/O uses the different address space for both memory and I/O.

2.8 An operating system is responsible for keeping track of where the data and program files are stored on secondary storage devices.

2.9 The main objective of time-sharing systems is to maximize processor usage.

2.10 Demand paging brings all the pages required for the program into the main memory.

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 containing the address of next instruction	**A.**	Flash Memory
3.2	Pen drive is an example of	**B.**	Associate Memory
3.3	Content Addressable Memory	**C.**	Instruction address register
3.4	System call creates the new process in Unix	**D.**	Asynchronous
3.5	The number of processes completed per unit time is known as	**E.**	Efficiency
3.6	Command used to record a user login session in a file	**F.**	Fork
3.7	Command is used to perform backup in Unix	**G.**	Script
3.8	Create a new file "new.txt" that is a concatenation of "file1.txt" and "file2.txt"	**H.**	Throughput
3.9	Computer data is transmitted block by block in transmission known as	**I.**	cpio
3.10	Type of computer data transmission which is called start/stop transmission is	**J.**	cat file1.txt file2.txt> new.txt
		K.	cp file.txt file2.txt new.txt
		L.	Intermittent
		M.	Synchronous

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.	DMA	**B.**	Ready queue	**C.**	Instruction Set Processor
D.	Program-controlled I/O	**E.**	Segments	**F.**	Pages
G.	Memory manager	**H.**	Process Identifier	**I.**	Logical address
J.	Zombie	**K.**	Dead	**L.**	Block
M.	Wakeup				

4.1 ISP stands for _____.

4.2 The program is divided into operable parts called as _____.

4.3 The method of accessing the I/O devices by repeatedly checking the status flags is _____.

4.4 The binary address issued to data or instructions are called as _____.

4.5 The method which offers higher speeds of I/O transfers is _____.

4.6 The processes that are residing in main memory and are ready and waiting to execute are kept on a list called _____.

4.7 The _____ swaps processes in and out of the memory.

4.8 In UNIX, each process is identified by its _____.

4.9 The only state transition that is initiated by the user process itself is _____.

4.10 The child process completes execution, but the parent keeps executing, then the child process is known as _____.

PART TWO

(Answer any FOUR questions)

5. (a) Explain the following addressing modes in detail :

(i) Register Mode

(ii) Register Indirect Mode

(iii) Direct Addressing Mode

(iv) Indirect Addressing Mode

(b) Explain UNIX architecture with its component. **(8+7)**

6. (a) Write a shell script which takes one number from user and finds factorial of a given number.

(b) Differentiate between software interrupt and hardware interrupt.

(c) Explain asynchronous data transfer along with its advantages and disadvantages. **(5+5+5)**

7. (a) Explain following command with two options :

(i) mkdir

(ii) mv

(iii) grep

(b) What is operating system ? Describe the functions of an operating system in detail. **(9+6)**

8. (a) Write a short note on DMA.

(b) Define computer register. Explain various registers used in basic computer organization with its functions.

(c) Explain the Instruction format in brief. **(5+5+5)**

9. (a) What are logic gates ? Explain the Universal Gates in detail. Using half adder implement full adder.

(b) Explain the role of process control block during the process execution in detail. **(8+7)**

- o O o -

SPACE FOR ROUGH WORK

SPACE FOR ROUGH WORK