

A6-R5 : COMPUTER ORGANIZATION AND OPERATING SYSTEM

अवधि : 03 घंटे

DURATION : 03 Hours

अधिकतम अंक : 100

MAXIMUM MARKS : 100

ओएमआर शीट सं. :					
OMR Sheet No. :					

रोल नं. :

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Roll No. :

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उत्तर-पुस्तिका सं. :

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Answer Sheet No. :

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परीक्षार्थी का नाम :

Name of Candidate :

परीक्षार्थी के हस्ताक्षर :

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 हैं तथा भाग दो "व्यक्तिपरक" प्रकार का है और इसके कुल अंक 60 हैं।	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, 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 ALU makes use of _____ to store the intermediate results.
- (A) Accumulators
 - (B) Registers
 - (C) Heap
 - (D) Stack
- 1.2** When we perform subtraction on -7 and 1 the answer in 2's complement form is _____.
- (A) 1010
 - (B) 1110
 - (C) 0110
 - (D) 1000
- 1.3** The addressing mode, where you directly specify the operand value is _____.
- (A) Immediate
 - (B) Direct
 - (C) Definite
 - (D) Relative

- 1.4** The transfer between CPU and Cache is _____.
- (A) Block transfer
 - (B) Word transfer
 - (C) Set transfer
 - (D) Associative transfer
- 1.5** The INTR interrupt may be :
- (A) maskable
 - (B) nonmaskable
 - (C) maskable and nonmaskable
 - (D) firmware
- 1.6** The strategy of making processes that are logically runnable to be temporarily suspended is called :
- (A) Non preemptive scheduling
 - (B) Preemptive scheduling
 - (C) Shortest job first
 - (D) First come First served
- 1.7** Which command is used to display the operating system name ?
- (A) os
 - (B) unix
 - (C) kernel
 - (D) uname

- | | |
|---|---|
| <p>1.8 The address of the next instruction to be executed by the current process is provided by the :</p> <p>(A) CPU registers</p> <p>(B) Program counter</p> <p>(C) Process stack</p> <p>(D) Pipe</p> | <p>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 instructions therein.</p> <p style="text-align: right;">(1x10)</p> |
| <p>1.9 Which of the following symbol is used with chmod to assign permission to a file ?</p> <p>(A) –</p> <p>(B) /</p> <p>(C) +</p> <p>(D) *</p> | <p>2.1 The command <code>wc < sample.txt</code> will count data from the file <code>sample.txt</code>.</p> <p>2.2 If a file is read protected, we can write to the file.</p> <p>2.3 <code>cd</code> commands cannot be used without any argument.</p> <p>2.4 User level threads can be scheduled independently.</p> <p>2.5 To overcome the slow operating speeds of the secondary memory we make use of faster flash drives.</p> <p>2.6 CPU controls only input data of computer.</p> <p>2.7 Unix / Linux is a open source operating system.</p> <p>2.8 The exclusive-NOR (XNOR) gate is simply an OR gate followed by a NOT gate.</p> <p>2.9 The representation of -1_{10} in eight-bit two's complement notation is 11110111.</p> <p>2.10 System calls are the classical method of enabling user processes to interact with the kernel.</p> |
| <p>1.10 Which of the following symbol(s) can be used to redirect the output to a file or another program ?</p> <p>(A) </p> <p>(B) ></p> <p>(C) >></p> <p>(D) , > and >></p> | |

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	Non Volatile Memory	A.	Threads
3.2	Addition of two binary bit	B.	Non preemptive algorithm
3.3	Light weight process	C.	Full Adder
3.4	FCFS	D.	NAND and NOR
3.5	Universal Gate	E.	Fork
3.6	Redirecting output to a file in Unix	F.	Pipes
3.7	Create a process	G.	RAM
3.8	Change the access permissions	H.	Operating System
3.9	System Software	I.	VLC Player
3.10	Application Software	J.	chmod
		K.	ROM
		L.	Half adder
		M.	HDD

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 attached to the question paper, following instructions therein. (1x10)

A.	/dev	B.	block	C.	Throughput
D.	Register	E.	lpr	F.	print
G.	1110	H.	Bit	I.	Byte
J.	Sign magnitude	K.	cp	L.	copy
M.	$A'B+AB'$				

- 4.1 The smallest unit of data in computer is _____.
- 4.2 Components that provide internal storage to the CPU are _____.
- 4.3 _____ is a straight-forward method of representing positive and negative numbers.
- 4.4 The 1's complement of 1 in 4 bits is _____.
- 4.5 The expression of an ExOR gate is _____.
- 4.6 _____ command is used to copy files and directories.
- 4.7 _____ command is used to print a file.
- 4.8 All device files are stored in _____ directory.
- 4.9 In a time-sharing operating system, when the time slot given to a process is completed, the process goes from the running state to the _____.
- 4.10 The number of processes completed per unit time is known as _____.

PART TWO

(Answer any FOUR questions)

5. (a) Differentiate between UNIX and Windows based operating systems.
(b) What is a priority interrupt technique ? Explain Daisy chaining method and its working with the help of suitable block diagram. (5+10)
6. (a) Explain different roles of operating system in brief.
(b) Explain hand shaking method of Asynchronous data transfer.
(c) What is the Distributed Operating System ? Explain the advantages of distributed operating system. (5+5+5)
7. (a) What is cache memory ? Explain associate mapping technique with a suitable example.
(b) Minimize the following expression using K-map.
 $f(A,B,C,D) = \Pi M(2, 6, 8, 9, 10, 11, 14)$
(c) What is the difference between process and a thread ? Describe some benefits of threads. (5+5+5)

8. (a) Describe how system call works.
Explain following system calls :
(i) fork (ii) ioctl
(iii) chmod (iv) sleep
(b) Describe the functionality of following commands in context of vi text editor :
(i) cat (ii) more
(iii) head (iv) grep
(v) tail (vi) less (6+9)
9. Briefly explain the following terms : (any three)
(a) Virtual Memory
(b) Instruction Formats
(c) Process Control Block
(d) Symbolic Links (5+5+5)

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SPACE FOR ROUGH WORK

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