Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Sc(H)/Bio.Tech/Gen./Mic.Bio/Mol.Bio./SEM-1/CA-101/2012-13

2012

INTRODUCTION TO COMPUTER

Time Allotted : 3 Hours Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : $10 \times 1 = 10$

i) Which one of the following operations is not performed by ALU ?

a) Clear

b) Floating point calculation

c) Logical OR

d) Logical AND.

ii) The idea of cache memory is based on

a) the heuristic 90-10 rule

b) the property of locality of reference

c) the fact that only a small portion of a program is referenced relatively frequently

d) all of these.

iii) The application which is best handled in ROM is

a) Storage for temporary variables

b) Storage for micro programs

c) Storage for protected passwords

d) Storage for information on cabling of terminals, such as which parts have terminals on them.

iv) Which of the following I/O mechanisms requires the least hardware support ?

a) Polled

b) Interrupt driven

c) DMA

d) Memory-mapped.

v) The name given to a special purpose processor or computer devoted to handling I/O independently of the main processor of the computer system is

a) Loader b) Channel

c) Track d) Bundler.

vi) LRU stands for

a) Last recently used

b) Latest recently used

c) Least recently used

d) None of these.

vii) Banker's Algorithm solves the problem of

a) Deadlock avoidance

b) Deadlock recovery

c) Context switching

d) Mutual exclusion.

viii) The scheduler which selects jobs from the pool of jobs and loads them to the ready queue is

a) long term b) short term

c) medium term d) none of these.

ix) CPU performance is measured through

a) Throughput b) MHz

c) Flaps d) None of these.

x) Mutual exclusion problem occurs between

a) two disjoint process that do not interact

b) processes that share resources

c) processes that do not share resources

d) none of these.

xi) An address generated by CPU is commonly referred to as

a) Logical address

b) Physical address

c) Relational address

d) Virtual address.

xii) Which is not a page replacement Algorithm ?

a) LRU b) FIFO

c) Round-Robin d) None of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. What is spawning and thread ?
3. Explain every state of process with diagram.
4. Explain necessary conditions for deadlock.
5. What do mean by multi-user and real-time operating system ?
6. Explain the task of input unit and control unit of a system.
7. Discuss about two types of disk attachment.
8. What is process ? Why CPU needs to be schedled before processing ?
9. Differentiate between preemption and non-preemption CPU scheduling with example.
10. Explain SJF algorithm for CPU scheduling.
11. Difference between Paging and Demand-Paging.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

12. a) What is Deadlock ? Compare and Contrast Deadlock Prevention and Deadlock Avoidance.

    b) Briefly discuss time sharing concept.

    c) Explain Thrashing and Hit ratio.

    d) What is OS ? Write the function of the OS in detail.

(2 + 4) + 2 + 4 + (1 + 2)

13. a) What is Semaphore ?

    b) What is the difference between Process and Thread ?

    c) Differentiate between long term scheduler and short term scheduler.

    d) What do you mean by the terms External fragmentation and Internal fragmentation ?

    e) What is Resource Allocation Graph ?

    f) What do you understand by Physical Address and Logical address ? 2 + 2 + 3 + 3 + 2 + 3

14. a) Define the terms Critical section and mutual exclusion.

    b) What are the necessary conditions to arise the deadlock and why ?

    c) Consider the following snapshot of the system :

Process	**Allocation**			**Max.**			**Available**		
	X	Y	Z	X	Y	Z	X	Y	Z
P0	0	1	0	7	5	3	3	3	2
P1	2	0	0	3	2	2			
P2	3	0	2	9	0	2			
P3	2	1	1	2	2	2			
P4	0	0	2	4	3	3			

    Answer the following questions using Banker's algorithm :

    i) What is the content of the need ?

    ii) Is the system in a safe state ? 3 + 4 + 8

15. Write short notes on any *three* of the following : 3 × 5

    a) Process Control Block

    b) Context Switching

    c) Virtual memory

    d) Multilevel Queue Scheduling and Aging

    e) Operating system and Function of Operating system.

16. a) What do you mean by File ? How do we implement a file ? Explain.

    b) What are Latency time and Seek time ?

    c) Describe the classification of file organization.

(1 + 3) + 4 + 7