BACHELOR OF COMPUTER APPLICATION
Fourth Semester
OPERATING SYSTEM
(BCA- 17)

Duration: 3Hrs. **Full Marks: 70**

PART A (Objective) =20
PART-B (Descriptive)=50

PART-B (Descriptive)

Duration: 2 hrs. 40 mins. **Marks: 50**

I. Answer any five of the following questions: **5×2=10**

a) What are the functions of Operating System?
b) What is Process Synchronization?
c) Define the following terms for a process-
(i) Turnaround Time (ii) Response Time
d) What is the difference between multiprogramming and time sharing operating system?
e) What do you mean by a Thread? Define each type of thread.
f) Compare a process and a program.
g) Write the difference between logical address space and physical address space.

2. Answer any five of the following questions: **5×3=15**

a) What is demand paging and page fault?
b) Define and explain Swapping.
c) Write short notes on-
(i) Batch OS (ii) Real Time OS
d) Explain Resource Allocation Graph (RAG) along with an example.
e) What is a scheduler? How many types of schedulers available? Define each type.
f) Write the C code to implement the Peterson's Solution to critical section.
g) Define semaphore. What are the different types of semaphores available?

3. Answer any five of the following questions: **5×5=25**

a) What are the different disk scheduling algorithms? Explain.

b) Define Deadlock. Under what conditions does a deadlock occur? Explain.

c) Assume you have the following jobs to execute :-

process	Arrival Time	Burst Time	Priority
A	0	3	3
B	1	6	5
C	2	2	2
D	3	4	1
E	4	2	4

Give it's GANTT chart and compute AWT and ATAT for the following scheduling algorithms.

Round Robin(q=1ms) (ii) Preemptive SJF

d) What do you mean by PCB? What is the state of a process? Along with the diagram, write the different states of a process.

e) Explain the bounded buffer problem of process synchronization.

f) Compare the Kernel Architecture with Layered Architecture of OS

g) Consider the following page replacement string-

7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1

How many page faults would occur for the following page replacement algorithms, assuming 3 as frame size:

(i) FIFO (ii) Optimal

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REV-00
BCA/08/12 2014/06

BACHELOR OF COMPUTER APPLICATION

Fourth Semester

OPERATING SYSTEM

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Duration: 20 minutes **Marks – 20**

PART-A (Objective)

Time: 20 mins **Total Marks: 20**

I. Choose the correct answer:- **20x1=20**

1. The primary job of an OS is to:
   a) Command Resources b) Manage Resources
   c) Provide Utilities d) Be user friendly

2. A small program which loads OS into the memory is called as:
   a) ROM b) Bootstrap Loader
   c) BIOS d) None of these

3. One can interact with an OS by means of:
   a) System Commands b) System Calls
   c) Both a and b d) None of these

4. Moving a process from main memory to the disk is called as:
   a)Scheduling b) Calling
   c) Swapping d) Spooling

5. The process of mapping of logical address to the real physical address is known as:
   a) Address Scheme b) Addressing modes
   c) Address Binding d) None of these

6. Logical memory is divided into:
   a) Pages b) Frames
   c) Partitions d) None of these

7. Which of the following is contained in PCB?
   a) Process No
   b) List of open files
   c) Memory Limits
   d) All of the above

8. For a non-sharable resource like a printer, mutual exclusion:
   a) Must exist
   b) Must not exist
   c) May exist
   d) none of these

9. The instruction being executed, must be in:
   a) Physical Memory
   b) Logical Memory
   c) None of these

10. Page fault rate (PFR) is given by-
   a) No of page fault* No of bits in the reference string
   b) No of page fault/No of bits in the reference string
   c) No of page fault+No of bits in the reference string
   d) None of these

11. Replace a page that has not been used for the longest period of time is the criteria of which of these algorithms:
   a) FIFO
   b) LRU
   c) OPTIMAL
   d) None of these

12. A process is created and is initially put in the
   a) Ready Queue
   b) Device Queue
   c) Any of these
   d) None of these

13. A thread is a
   a) Task
   b) Process
   c) Program
   d) Lightweight process

14. A short term scheduler executes at least once every
   a) 1 ms
   b) 5ms
   c) 10ms
   d) None of these

15. The average amount of work completed per unit time is called as:
   a) CPU Utilization
   b) Bandwidth
   c) Turn around Time
   d) Throughput

16. Round-Robin scheduling is most suitable for:
   a) Time-shared OS
   b) Distributed OS
   c) Real-time OS
   d) None of these

17. Context switching is:
   a) Part of spooling
   b) Part of pooling
   c) Part of interrupt handling
   d) none of these

18. Semaphores are given by
    a) Albert
    b)Dijkstra
    c) Peterson
    d) none of these

19. In Resource Allocation Graph (RAG), circles represent:
    a) Processes
    b) Resources
    c) Both 'a' and 'b'
    d) None of these

20. To recover from deadlock, the method used is:
    a) Process termination
    b) Resource preemption
    c) Both of these
    d) None of these

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