

2014

( 3rd Semester )

**BACHELOR OF COMPUTER APPLICATION**

Paper No. : BCA-302

**( Fundamentals of Operating System )**

( PART : A—OBJECTIVE )

( Marks : 25 )

*The figures in the margin indicate full marks for the questions*

SECTION—I

( Marks : 15 )

1. Select the correct answer by putting a Tick ( ✓ ) mark in the brackets provided : 1×10=10

(a) A — manages the execution of user programs to prevent errors and improper use of the computer.

(i) user interface ( )

(ii) control program ( )

(iii) clustered system ( )

(iv) physical memory ( )

(b) Creating a number of threads at process startup and place them into a pool, where they sit and wait for work is known as

(i) P threads ( )

(ii) Solaris 2 threads ( )

(iii) thread pool ( )

(iv) buffering ( )

(c) Logical memory broken into blocks of the same size is called

(i) frame ( )

(ii) block ( )

(iii) segment ( )

(iv) page ( )

(d) — is the separation of user logical memory from physical memory.

(i) Demand paging ( )

(ii) Demand segmentation ( )

(iii) Virtual memory ( )

(iv) Virtual-address space ( )

(e) — is a process that uses the spawn mechanism to clobber system performance.

(i) WORM ( )

(ii) Viruse ( )

(iii) Trapdoor ( )

(iv) All of the above ( )

(f) A — system functions correctly only if it returns the correct result within its time constraints.

(i) multiprogramming ( )

(ii) parallel ( )

(iii) distributed ( )

(iv) real-time ( )

(g) A/An — bound generates input-output requests infrequently, using more of its time doing computation.

(i) CPU ( )

(ii) input-output ( )

(iii) input ( )

(iv) output ( )

(h) Find the odd one out of the following :

- (i) Mutual exclusion ( )
- (ii) Hold and release ( )
- (iii) No preemption ( )
- (iv) Circular wait ( )

(i) — is used to constrain the potential senders and receivers of a message.

- (i) Cryptography ( )
- (ii) Authentication ( )
- (iii) Encryption ( )
- (iv) Decryption ( )

(j) A situation where several processes access and manipulate the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place is

- (i) critical section problem ( )
- (ii) bounded-buffer problem ( )
- (iii) readers-writers problem ( )
- (iv) rare condition ( )

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2. State whether the following statements are *True (T)* or *False (F)* by putting a Tick (✓) mark : 1×5=5

(a) In symmetric clustering, one machine is in hot standby mode while the other is running the applications.

( T / F )

(b) The bounded-buffer producer-consumer problem places no practical limit on the size of the buffer.

( T / F )

(c) The fork() system call creates a child process as a duplicate of its parent.

( T / F )

(d) One-time passwords change the sent data each time to avoid replay attacks.

( T / F )

(e) A state is safe if the system can allocate resources to each process (up to its maximum) in some order and still avoid a deadlock.

( T / F )

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SECTION—II

( Marks : 10 )

3. Answer the following questions : 2×5=10

(a) Write a short note on peer-to-peer systems.





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- (e) Differentiate between logical address space and physical address space.

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**2014**

( 3rd Semester )

**BACHELOR OF COMPUTER APPLICATION**

Paper No. : BCA-302

**( Fundamentals of Operating System )**

Full Marks : 75

Time : 3 hours

**( PART : B—DESCRIPTIVE )**

( Marks : 50 )

*The figures in the margin indicate full marks  
for the questions*

1. (a) What do you understand by system calls? Explain any four services provided by an operating system with example.

2+8=10

Or

- (b) Define the essential properties of the following types of operating system :

2×5=10

- (i) Multiprocessor systems
- (ii) Time sharing/Multitasking
- (iii) Real-time system
- (iv) Distributed system
- (v) Clustered system

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( Turn Over )

2. (a) Explain message passing system in brief. 4
- (b) Describe the differences among short-term scheduling, medium-term scheduling and long-term scheduling. 6

Or

- (c) Explain any four types of scheduling algorithm with a neat diagram. 10

3. (a) Explain swapping with a neat diagram. 4

- (b) Differentiate between paging and segmentation. 6

Or

- (c) Explain the concept of demand paging with a neat diagram. Write a short note on process creation. 5+5=10

4. (a) Explain different types of access method. Write a short note on acyclic-graph directories. 6+4=10

Or

- (b) What is allocation method? Explain the following with a neat diagram : 10

(i) Contiguous allocation

(ii) Linked allocation

(iii) Indexed allocation

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5. (a) Explain various methods of deadlock avoidance. 10

Or

- (b) Write short notes on authentication and encryption. Explain different methods of user authentication. 5+5=10

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