TILAK MAHARASHTRA VIDYAPEETH, PUNE
BACHELOR OF COMPUTER APPLICATIONS (B.C.A.)
SPECIALIZATION IN CYBER SECURITY (CS)
EXAMINATION : JUNE - 2022
SEMESTER - I
Sub: Operating System (BCA-146-18/BCA-146-20/BCA-CS-146-20)

Date : 24/06/2022   **Total Marks : 60**   **Time: 10.00 am to 12.30 pm**

Instructions:
1. *All questions are compulsory unless and otherwise stated.*
2. *Bold figures to the right of every question are the maximum marks for that question.*
3. *Candidates are advised to attempt questions in order.*
4. *Answers written illegibly are likely to be marked zero.*
5. *Use of scientific calculators, Log tables, Mollier Charts is allowed.*
6. *Draw neat and labelled diagrams wherever necessary.*

Q.1.   **Fill in the blanks.**   **(5)**

1. The operating system is the most common type of _____ software.
   - a. Communication
   - b. Application
   - c. System
   - d. Word processing so

2. A system program that sets up an executable program in main memory ready for execution is _____.
   - a. Assembler
   - b. Linker
   - c. Loader
   - d. Compiler

3. Producer consumer problem can be solved using _____.
   - a. Semaphores
   - b. Event counters
   - c. Monitors
   - d. All of the above

4. System that measures, monitors, analyzes, and controls real-world events is called_____.
   - a. System software
   - b. Real - time software
   - c. Business software
   - d Scientific software

5. Four necessary conditions for deadlock to exist are: mutual exclusion, no-preemption, circular wait and_____.
   - a. hold and wait
   - b. deadlock avoidance
   - c. race around condition
   - d. buffer overflow

Q.2.   **State True/False.**   **(5)**

1. Operating system provides a layered, user-friendly interface.

2. A page fault occurs when a program accesses a page of memory.

3. Interprocess communication allows processes to synchronize activity.

4. The file name is generally split into two parts i.e. file size and file name.

5. Internal fragmentation is increased with small pages.

Q.3. **Answer the following. (Solve any 5)** **(10)**

1. What are semaphores?

2. List all the components of operating system.

3. Define best fit algorithm.

4. What is IPC?

5. Define starvation.

6. What are system calls?

Q. 4. **Answer the following in detail. (Solve any 6)** **(30)**

1. Describe deadlock situation.

2. Explain monitor using diagrams.

3. Difference between preemptive and non-preemptive scheduling.

4. Explain authentication and authorization in operating systems

5. Explain file types and file attributes

6. Explain services of operating system.

7. Distinguish between paging and segmentation.

Q. 5. **Answer the following in detail. (Solve any 1)** **(10)**

1. Describe the types of operating systems.

2. Describe file system mounting and file system structure.

_____