TOTAL PAGES: 2

**22NMB210N**

# PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

## BVoc DEGREE EXAMINATION MAY 2026
(Second Semester)

Branch- **NETWORKING AND MOBILE APPLICATION**

**OPERATING SYSTEM CONCEPTS**

Time: Three Hours  Maximum: 75 Marks

## SECTION-A (10 Marks)
Answer **ALL** questions

**ALL** questions carry **EQUAL** marks  (10 × 1 = 10)

| Module No. | Question No. | Question | K Level | CO |
|---|---|---|---|---|
| 1 | 1 | 1. Which of the following is NOT a function of an operating system?<br>i) Process management  ii) Memory management<br>iii) Database management  iv) File system management | K1 | CO1 |
| | 2 | Show the correct sequence of process states.<br>i) New → Ready → Running → Terminated<br>ii) Running → New → Ready → Terminated<br>iii) Ready → Running → New → Terminated<br>iv) Terminated → Ready → Running → New | K2 | CO1 |
| 2 | 3 | What is a key characteristic of kernel-level threads?<br>i) They are faster than user-level threads because they do not require OS intervention.<br>ii) They are managed by the operating system and require mode switching.<br>iii) They do not require synchronization when sharing resources.<br>iv) They are managed entirely by the user application without OS involvement. | K1 | CO2 |
| | 4 | Show the strategy helps in preventing deadlock by ensuring that a process requests all required resources before execution?<br>a) Hold and Wait condition<br>b) Circular Wait condition<br>c) Resource Allocation Graph method<br>d) One-shot (All-or-Nothing) Request strategy | K2 | CO2 |
| 3 | 5 | Which type of scheduling decides which process should be allocated the CPU next?<br>i) Long-term scheduling  ii) Medium-term scheduling<br>iii) Short-term scheduling  iv) I/O scheduling | K1 | CO3 |
| | 6 | i) Paging eliminates external fragmentation but may cause internal fragmentation.<br>ii) Paging ensures that all memory pages are stored contiguously in physical memory.<br>iii) Paging requires each process to be loaded in one continuous block in memory.<br>iv) Paging removes the need for a page table in memory management | K2 | CO3 |
| 4 | 7 | What is the primary function of a disk cache?<br>i) To increase the physical storage capacity of hard drive<br>ii) To temporarily store frequently accessed disk data in faster memory<br>iii) To replace main memory in an operating system<br>iv) To directly manage disk scheduling algorithms | K1 | CO4 |
| | 8 | Show the primary purpose of I/O buffering in an operating system?<br>i) To increase the CPU scheduling speed<br>ii) To allow direct communication between applications and hardware<br>iii) To reduce the time a process spends waiting for I/O operations<br>iv) To eliminate the need for device drivers | K2 | CO4 |

Cont...

| | | | | |
|---|---|---|---|---|
| 5 | 9 | Which file access method is the most suitable for large databases that require fast searches?<br>i) Sequential Access ii) Direct Access<br>iii) Indexed Access iv) Contiguous Access | K1 | CO5 |
| | 10 | Show Why is secondary storage management important in file systems?<br>i) It improves system performance by managing file access efficiently.<br>ii) It allows programs to execute faster by reducing memory usage.<br>iii) It enables users to store files only in primary memory.<br>iv) It removes the need for disk scheduling algorithms. | K2 | CO% |

## SECTION - B (35 Marks)

Answer **ALL** questions

**ALL** questions carry **EQUAL** Marks (5 × 7= 35)

| Module No. | Question No. | Question | K Level | CO |
|---|---|---|---|---|
| 1 | 11.a. | Demonstrate the process creation. | K2 | CO1 |
| | | (OR) | | |
| | 11.b. | Relate simple batch system with multi programmed batch system. | | |
| 2 | 12.a. | Identify the difference between multi-core and multi-threading. | K3 | CO2 |
| | | (OR) | | |
| | 12.b. | Organize and explain the following resources.<br>i) Reusable ii) Consumable | | |
| 3 | 13.a. | Apply paging in memory partitioning. | K3 | CO3 |
| | | (OR) | | |
| | 13.b. | Identify and explain about any two scheduling algorithms. | | |
| 4 | 14.a. | Analyze the categories of IO devices and its key differences. | K4 | CO4 |
| | | (OR) | | |
| | 14.b. | List the methods used for IO Buffering. | | |
| 5 | 15.a. | Examine the operations in File directories. | K4 | CO5 |
| | | (OR) | | |
| | 15.b. | Analyse about B-Trees and its properties. | | |

## SECTION - C (30 Marks)

Answer **ANY THREE** questions

**ALL** questions carry **EQUAL** Marks (3 × 10 = 30)

| Module No. | Question No. | Question | K Level | CO |
|---|---|---|---|---|
| 1 | 16 | Examine in detail about five state process model. | K4 | CO1 |
| 2 | 17 | List out the various techniques for Dead lock prevention and detection. | K4 | CO2 |
| 3 | 18 | Compare fixed partitioning vs dynamic partitioning in memory management. | K4 | CO3 |
| 4 | 19 | Categorize the types of RAID levels and explain its data access. | K4 | CO4 |
| 5 | 20 | Analyze the File and File system organization and access. | K4 | CO5 |

Z-Z-Z END