Bachelor of Computer Application (B.C.A.) Semester-I (C.B.S.) Examination
OPERATING SYSTEMS
Paper—V

Time : Three Hours]   [Maximum Marks : 50

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Draw neat and labelled diagram wherever necessary.

EITHER

1. (a) What is a thread ? Explain the concept of multithreading with a suitable example.   5

(b) Explain schedulers and type of schedulers in detail.   5

OR

(c) Describe Round Robin CPU scheduling algorithm.   5

(d) What is Micro Kernel ? Explain its architecture and benefits.   5

EITHER

2. (a) Explain mutual exclusion in detail.   5

(b) What is deadlock ? Explain resource allocation graph.   5

OR

(c) Explain the methods for recovery from deadlock.   5

(d) Explain Hold and Wait condition in brief.   5

EITHER

3. (a) Write short notes on :

(i) Paging

(ii) Compaction.   5

(b) Explain the concept of segmentation with paging.   5

OR

(c) What is swapping ? Explain swapin and swapout process with well labelled diagram.   5

(d) Explain single partition allocation mechanism with example.   5

EITHER

4. (a) Explain I/O buffering. Why is it necessary ? What are the different types of buffers ?   5

(b) Explain the concept of file directories.   5

OR

(c) Write notes on :

(i) RAID

(ii) Disk Cache.   5

(d) Explain various file accessing methods.   5

5. Attempt all :

(a) Explain process creation.   2½

(b) Explain queuing analysis.   2½

(c) Explain memory management requirement.   2½

(d) Explain cryptography.   2½

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   OR

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   (d) What is Micro Kernel ? Explain its architecture and benefits. 5

   EITHER

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   (b) What is deadlock ? Explain resource allocation graph. 5

   OR

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   (d) Explain Hold and Wait condition in brief. 5

   EITHER

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   (i) Paging

   (ii) Compaction. 5

   (b) Explain the concept of segmentation with paging. 5

   OR

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   (d) Explain single partition allocation mechanism with example. 5

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N.B. :— (1) **ALL** questions are compulsory and carry equal marks.

       (2) Draw neat and well labelled diagrams wherever necessary.

EITHER

1. (a) What is the structure of Operating System ? Explain alongwith its functions.   5

     (b) What are the differences between process and threads ? Explain process states alongwith a diagram.   5

OR

     (c) What are Threads ? Explain its Life Cycle.   5

     (d) Explain FCFS, SRTF and Round Robin CPU scheduling algorithms with proper example.   5

EITHER

2. (a) What do you mean by Performance Comparison ? Explain :

        (i) Deterministic Modelling.

        (ii) Quering Analysis.   5

     (b) Explain Deadlock. What is resource allocation graph ?   5

OR

     (c) What is Deadlock Prevention ? How can we prevent a deadlock ?   5

     (d) What is Deadlock Recovery ? How can we recover from a deadlock ?   5

EITHER

3. (a) What is logical and physical address space ? What are the memory management requirements ?   5

     (b) What are memory allocation methods ? Explain both single and multiple partition methods.   5

OR

     (c) What is Paging ? Explain. Write advantages and disadvantages of paging.   5

     (d) What is Segmentation ? Explain. Write advantages of segmentation.   5

EITHER

4. (a) Draw a well labelled diagram of I/O Hardware. Explain the role of components in the architecture.   5

     (b) Explain I/O buffering. Describe its types.   5

OR

     (c) Explain all five disk scheduling algorithms with proper example and diagram.   5

     (d) What are different file allocation methods ? Explain with a suitable diagram.   5

5. Attempt **ALL** :

     (a) Explain Internal and External Fragmentation.   2½

     (b) Write note on Multithreading.   2½

     (c) What is Long Term Scheduling ?   2½

     (d) What is Compaction ? Explain how is it possible to avoid fragmentation.   2½

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N.B. :— (1)   All questions are compulsory and carry equal marks.

(2)   Draw neat and well labelled diagrams wherever necessary.

EITHER

1.   (a)   Explain the structure of Operating System.   5

(b)   What is Process ? Explain different process states.   5

OR

(c)   Explain :

(i)   Concurrent Process

(ii)   Multithreading.   5

(d)   Explain FCFS (First Come First Served) CPU Scheduling algorithm with example.   5

EITHER

2.   (a)   Explain :

(i)   Deterministic modelling

(ii)   Queuing analysis.   5

(b)   What is Resource allocation graph ? Explain.   5

OR

(c)   What is deadlock ? Explain the conditions for deadlock.   5

(d)   Explain the methods for recovery from deadlock.   5

EITHER

3.   (a)   Explain :

(i)   Logical Vs Physical address space

(ii)   Internal Vs External fragmentation.   5

(b)   Explain the different memory management requirements.   5

OR

(c) Explain single partition allocation mechanism with example.   5

(d) Explain the concept of paging.   5

EITHER

4. (a) Explain I/O buffering mechanism.   5

   (b) Explain Disk Cache.   5

OR

(c) Explain cryptography in detail.   5

(d) Explain the concept of file directories.   5

5. Attempt **all** :

   (a) Explain different types of schedulers.   2½

   (b) Explain Dead lock detection.   2½

   (c) Explain dynamic linking.   2½

   (d) Explain Record blocking.   2½

KNT/KW/16/5243

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OPERATING SYSTEMS

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(2) Draw neat and well labelled diagrams wherever necessary.

EITHER

1. (a) Explain the structure of Operating System.   5

(b) What is Process ? Explain different process states.   5

OR

(c) Explain :

(i)   Concurrent Process

(ii) Multithreading.   5

(d) Explain FCFS (First Come First Served) CPU Scheduling algorithm with example.   5

EITHER

2. (a) Explain :

(i)   Deterministic modelling

(ii) Queuing analysis.   5

(b) What is Resource allocation graph ? Explain.   5

OR

(c) What is deadlock ? Explain the conditions for deadlock.   5

(d) Explain the methods for recovery from deadlock.   5

EITHER

3. (a) Explain :

(i)   Logical Vs Physical address space

(ii) Internal Vs External fragmentation.   5

(b) Explain the different memory management requirements.   5

OR

(c) Explain single partition allocation mechanism with example. 5

(d) Explain the concept of paging. 5

EITHER

4. (a) Explain I/O buffering mechanism. 5

(b) Explain Disk Cache. 5

OR

(c) Explain cryptography in detail. 5

(d) Explain the concept of file directories. 5

5. Attempt **all** :

(a) Explain different types of schedulers. 2½

(b) Explain Dead lock detection. 2½

(c) Explain dynamic linking. 2½

(d) Explain Record blocking. 2½

Bachelor of Computer Application (B.C.A.) Semester—I Examination

OPERATING SYSTEMS

Paper—V

Time : Three Hours]   [Maximum Marks : 50

Note :— (1) **ALL** questions are compulsory and carry equal marks.

(2) Draw neat and labelled diagram wherever necessary.

EITHER

1. (a) What is Operating System ? Explain different functions of operating system.   5

(b) Explain the following terms :

(1) Process

(2) Creation and termination operation of process.   5

OR

(c) What is multithreading ? Explain with a suitable example.   5

(d) What is scheduling ? Explain SJP Shortest-Job First algorithm.   5

EITHER

2. (a) What is deadlock ? Explain various conditions arising from deadlock.   5

(b) Write short notes on :

(1) Resource Allocation Graph

(2) Simulators.   5

OR

(c) What is deadlock detection ? Explain recovery of deadlock.   5

(d) Write short notes on :

(1) Deterministic Modeling

(2) Queuing Analysis.   5

EITHER

3. (a) Write short notes on :

(1) Swapping

(2) Memory Allocation.   5

(b) What is dynamic loading and dynamic linking ? Explain.   5

OR

(c) Describe the following memory allocation methods :

    (1) Single partition allocation

    (2) Multiple partition allocation.   5

(d) What is paging ? Explain.   5

EITHER

4. (a) Explain various file accessing methods.   5

  (b) What is record blocking ? Explain.   5

OR

  (c) How is digital signature used for user authentication ?   5

  (d) Write notes on the following :

    (1) I/O hardware

    (2) I/O buffering.   5

5. Attempt *all* :

  (a) What is process thread ? Explain.   2½

  (b) Explain starvation.   2½

  (c) Explain segmentation with paging.   2½

  (d) Explain the concept of cryptography.   2½

NIR/KW/18/2210

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OPERATING SYSTEMS
Paper–V

Time : Three Hours]   [Maximum Marks : 50

N.B. :— (1) All questions are compulsory and carry equal marks.

(2) Draw well labelled diagrams wherever necessary.

EITHER

1. (a) Differentiate between process and threads.   5

   (b) Describe the Shortest-Job-First (SJF) CPU scheduling algorithm.   5

   OR

   (c) What is an Operating System ? Explain different functions of operating system.   5

   (d) What is multithreading ? Explain with suitable example.   5

   EITHER

2. (a) Define Deadlock and Starvation. Explain the conditions for Deadlock.   5

   (b) Explain :

   (i) Deterministic Modeling.

   (ii) Queuing Analysis.   5

   OR

   (c) Explain Resource Allocation Graph with suitable example.   5

   (d) What is deadlock ? Explain recovery from deadlock.   5

   EITHER

3. (a) Write short notes on :

   (i) Segmentation.

   (ii) Paging.   5

   (b) What is dynamic loading and dynamic linking ? Explain.   5

   OR

   (c) Explain the concept of swapping along with suitable example.   5

   (d) Describe the following memory allocation methods :

   (i) Single partition allocation.

   (ii) Multiple partition allocation.   5

   EITHER

4. (a) Write short notes on :

   (i) Digital Signature.

   (ii) User Authentication.   5

   (b) Explain I/O buffering mechanism.   5

   OR

   (c) What is disk space management ? Explain record blocking.   5

   (d) What are different file allocation methods ? Explain with a suitable diagram.   5

5. (a) Explain different types of schedulers.   2½

   (b) What are concurrent processes ? Explain.   2½

   (c) Explain logical and physical address space.   2½

   (d) Write a note on Disk Cache.   2½