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772 (OS)

[20-HRGPNW–D3S(N)21A]

BCA 3rd Semester (New) Exam., 2020 (W)

OPERATING SYSTEM

GCA S3–03

Full Marks : 80

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. *(a)* Answer the following questions : 1×8=8

(i) What is kernel?

(ii) What is throughput?

(iii) Define page fault.

(iv) What is the purpose of semaphore?

(v) Mention the use of cache memory.

(vi) What are sleep and wakeup system calls?

(vii) Mention the objectives of scheduling.

(viii) What are static networks?

(b) Fill in the blanks : 1×4=4

(i) The _____ operating system performs even if certain part of the hardware is malfunctioning.

(ii) Operating system groups all information that it needs about a particular process into a data structure called a _____.

(iii) A process can have three states named _____, _____ and _____.

(iv) When the operating system creates a process at the explicit request of another process, the action is referred to as _____.

(c) Choose the correct option from the following : 1×4=4

(i) Deadlock prevention guarantees that

(1) deadlock will not occur

(2) deadlock will occur

(3) Both (1) and (2)

(4) None of the above

(ii) A signal that informs a program that an event has occurred is called

(1) process

(2) thread

(3) interrupt

(4) deadlock

(iii) Real address means

(1) the address assigned to a process

(2) the range of memory addresses available to a process

(3) the address of a storage location in main memory

(4) None of the above

(iv) A/An _____ does not replicate itself.

(1) worm

(2) anti-virus

(3) Trojan horse

(4) None of the above

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

(a) What is the central idea behind the working of batch-processing scheme of operating system?

(b) Define interprocess communication.

(c) What are the requirements to achieve mutual exclusion?

(d) What is secret-key cryptography?

(e) Write two uses of thread in designing operating system.

(f) What is need of page replacement?

3. Answer any *four* of the following questions : 6×4=24

(a) What are job queue, ready queue and device queue?

(b) What are the conditions that must be present for a deadlock to occur? Explain in brief.

(c) What are the benefits of access control?

(d) What are the two difficulties that arise with the use of equal-size fixed partitions of memory partitioning?

(e) What is file attribute and what is its use? What are the bit codes for file attribute Hidden, Read-only and Systems?

(f) Differentiate between non-primitive and primitive schedulings.

(g) Discuss the process of swapping.

4. Answer any *five* of the following questions : 6×5=30

(a) What are security threats in operating system? Mention the five main goals of security.

(b) Differentiate between symmetric and asymmetric multi-processors.

(c) Describe the life cycle of a thread. Differentiate between a process and a thread. 3+3=6

(d) What is the purpose of Direct Memory Access (DMA)? Discuss the working principles of DMA. 2+4=6

(e) Describe the process of paging.

(f) Write short notes on any *two* of the following : 3×2=6

(i) Two-level directory structure

(ii) Race condition

(iii) Device drivers

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