

Total No. of printed pages = 9

END SEMESTER/RETEST EXAMINATION – 2022

Semester : 5th (Old)

Branch : Computer

Subject Code : CO-504

OPERATING SYSTEM

Full Marks – 70

Time – Three hours

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

Instructions :

1. *All* questions of PART–A are compulsory.
2. Answer any *five* questions from PART–B.

PART – A

Marks – 25

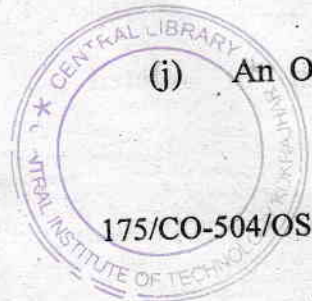
1. Fill in the blanks : 1×10=10
 - (a) Data stores temporarily in _____.
 - (b) _____ is a collection of related information.

[Turn over

- (c) A _____ is a command interpreter.
- (d) Multi-programming is also called _____.
- (e) Banker's algorithm is a deadlock _____ algorithm.
- (f) The file system implementation is done through _____.
- (g) In _____ scheduling, once the CPU is assigned to a process, the processor do not release until the completion of that process.
- (h) Physical memory space is divided into fixed sized blocks called as _____.
- (i) The UNIX operating system is made up of three parts the kernel, the _____ and the program.
- (j) An OS is a _____ software.

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(2)



Multiple choice questions.

2. Choose the correct options of the following :

1×10=10

(a) A thread is a _____.

- (i) Task
- (ii) Process
- (iii) Program
- (iv) Light weight process

(b) Which of the following is not advantage of multi-programming ?

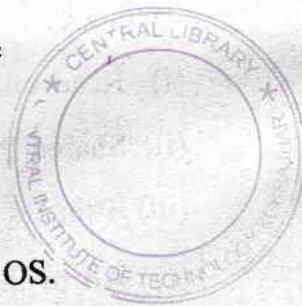
- (i) Increased throughput
- (ii) Shorter response
- (iii) Decreased Overhead
- (iv) Abilities to be assigned

(c) Which of the following resources can cause deadlocks ?

- (i) Read only files
- (ii) Shared Programs
- (iii) Printers
- (iv) All of the above



- (d) What is the purpose of Resource Allocation Graph ?
- (i) To represent deadlock
 - (ii) To detect deadlock
 - (iii) To avoid deadlock
 - (iv) To prevent deadlock
- (e) Moving process from main memory to disks is called
- (i) Scheduling
 - (ii) Cashing
 - (iii) Swapping
 - (iv) Spooling
- (f) In the segmentation, the main memory is divided into number of segment sizes must be
- (i) Need not same
 - (ii) Same
 - (iii) Can't say
 - (iv) Depending on OS.



- (g) Demand paging
- (i) Fetches a page only when needed
 - (ii) Fetches a page that is likely to be demanded
 - (iii) Pages out pages when that page form is needed it
 - (iv) Page out Page in large group.
- (h) Spooling is most beneficial in Multi programming Environment where
- (i) most jobs are i/o bound
 - (ii) most jobs are CPU-bound
 - (iii) jobs are evenly divided as i/o bound and cpu-bound
 - (iv) There is limited primary memory and need for secondary memory.
- (i) To retrieve a single record which is the best
- (i) Indexed
 - (ii) Sequential
 - (iii) Indexed sequential
 - (iv) Hashed



(j) A Page fault occurs

(i) When a program accesses a page memory.

(ii) Is an error in specific page

(iii) Is an access to a page not currently in memory.

(iv) Is a reference to a page belonging to another page

3. Answer the following questions in brief :

1×5=5

(a) What is a process ?

(b) What is a resource ?

(c) What is batch processing ?

(d) Define throughput.

(e) Define cache memory.

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(6)



PART – B

Marks – 45

4. Consider the following set of processes with the given information for : $4.5 \times 2 = 9$

- (a) FCFS scheduling algorithm and
- (b) SJF scheduling algorithm

| Process | CPU Time / Burst Time(in ms) |
|---------|------------------------------|
| P1 | 5 |
| P2 | 10 |
| P3 | 8 |
| P4 | 3 |

For both the algorithm :

- (i) Draw the Gantt Chart.
- (ii) Find the average waiting time.
- (iii) Find the average turn around time.

5. (a) What are the different types of Schedulers ?

3

(b) Briefly explain the purposes of different types of schedulers.

6

6. (a) What is Multi-programming ? 3
- (b) Illustrate some features of UNIX Operating System. 6
7. (a) Summarize the objectives and functions of an operating system. 3
- (b) What are the four necessary and sufficient conditions behind the deadlock ? Describe. 6

8. Consider the following Page Reference String

4,7,6,1,7,6,1,2,7,2

How many Page Faults would occur for the following Page Replacement Algorithms assuming three (3) page Frames ?

- (a) FIFO replacement
- (b) LRU replacement
- (c) Optimal replacement 3×3=9



9. How to implement a file system ? Explain in details. 9
10. (a) What is SPOOLING ? 2
- (b) Mention the characteristics of dedicated, shared and virtual devices. 7

