3 SEM BCA (CBCS) OS 3·5

2024

(December)

COMPUTER APPLICATION

Paper : 3·5

(Operating System)

Full Marks : 60

Time : Three hours

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

1. Choose the correct answer from the following : 1×5=5

   (a) In operating system, each process has its own –

   (i) address space and global variables

   (ii) open tiles

   (iii) pending alarms, signals and signal handlers

   (iv) All of the mentioned above

   (b) In Unix, which system call creates the new process ?

   (i) fork

(ii) create

(iii) new

(iv) None of the mentioned above

(c) A process can be terminated due to –

(i) normal exit

(ii) fatal error

(iii) killed by another process

(iv) All of the mentioned above

(d) _____ approach allocates the first free partition or hole large enough which can accommodate the process.

(i) Best-fit

(ii) First-fit

(iii) Worst-fit

(iv) None of the above

(e) In Direct Memory Access (DMA), the CPU is :

(i) Always involved in data transfer

(ii) Involved at the start and end of data transfer but not during the transfer

(iii) Not involved at all in data transfer

(iv) Involved in controlling every byte of data transfer

2. (a) (i) What is operating system ? What are the functions of OS ? 8

Or

(ii) What is process ? Draw and explain the process state diagram.

(b) What is Dining Philosopher problem ? How this problem can be solved ? Explain. 7

(c) Consider the following set of process. Find average waiting time with SJF scheduling with pre-emption. Also draw Gantt chart. 6

Process	Arrival time	Burst Time
*P*0	0	9
*P*1	1	4
*P*2	2	9
*P*3	3	5

3. (a) What is the need of Page replacement ? Consider the following reference string : 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1
Find the number of Page Faults with LRU with four free frames which are empty initially.

2+6=8

(b) (i) What is a deadlock ? What are the necessary conditions for deadlock. 2+4=6

Or

(ii) What is segmentation ? How segmentation is different from paging ? Explain. 2+4=6

4. (a) (i) What is a directory ? Explain different types of directory structures. 2+6=8

Or

(ii) What is DMA ? How does it work ? Explain. 8

(b) What is I/O scheduling ? Explain. How it is different from process scheduling ? 4+2=6

(c) Define the following : 2×3=6

(i) Spooling

(ii) Device Driver

(iii) Free space management