Total No. of printed pages = 7

Co-505/OS/5th Sem/2018/M

OPERATING SYSTEM

Full Marks – 70

Pass Marks – 28

Time – Three hours

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

Answer *all* questions.

SECTION – A

Marks – 25

1. (a) State true or false : 1×5=5

(i) A major problem with round robin scheduling is indefinite blocking or starvation.

(ii) In batch system, jobs are executed in a sequential manner.

(iii) A file is a named collection of related information that is recorded on secondary storage.

[Turn over

(iv) Time sharing (or multitasking) is logical extension of multi-programming.

(v) Contiguous allocation can not suffer from external fragmentation.

(b) Fill up the blanks : $1 \times 5 = 5$

(i) A ..... is a buffer that holds output for a device, such as a printer, that can not accept interleaved data streams.

(ii) That part of program where the shared memory is accessed is called the ..... .

(iii) A ..... is a program in execution.

(iv) The interval from the time of submission of a process to the time of completion is termed as ..... .

(v) The occurrence of an event is usually signalled by an ..... from either the hardware or the software.

(c) Choose the correct alternative : $1 \times 10 = 10$

(i) What is the state of a process when the process is waiting for some event to occur ?

(a) Running state (b) Busy state

(c) Waiting state (d) Terminating state

(ii) Which scheduling algorithm allocates the CPU first to the process that requests the CPU first ?

(a) SJF

(b) Best fit

(c) Priority scheduling

(d) FCFS

(iii) When two or more processes are reading or writing some shared data and the final result depends on who runs precisely when, are called

(a) deadlock condition

(b) race conditions

(c) both (a) and (b)

(d) none of the above

(iv) DOS stands for

(a) Data Operating System

(b) Do Or Support

(c) Disk Operating System

(d) none of the above

(v) The technique of gradually increasing the priority of processes that wait in the system for a long period of time is called

(a) Paging (b) Segmenting

(c) Aging (d) Prioritising

(vi) While working with MS-DOS, which command will you use to transfer a specific file from ?

(a) Diskcopy (b) Xcopy

(c) Copy (d) None of the above

(vii) A page fault

(a) is an error in a specific page

(b) is an access to page not currently in memory

(c) is a reference to a page belonging to another program

(d) none of the above.

(viii) Which of the following is false about disk when compared to main memory ?

(a) Non-volatile

(b) Larger storage capacity

(c) Faster

(d) None of these

(ix) Producer consumer problem can be solved using

(a) Semaphore

(b) Monitor

(c) All of the above

(d) None of the above

(x) The CPU, after receiving an interrupt from an I/O device

(a) Halts for a predefined time

(b) Go to the interrupt service routine immediately

(c) Go to the interrupt service routine after completing current instruction

(d) None of the above

(d) Match words and phrase in column X with the closest related meaning word(s) in column Y. 1×5=5

X	Y
(a) Cache memory	(i) Light weight process
(b) Thread	(ii) Locality of reference
(c) Hard disk	(iii) Main memory

X	Y
(d) Throughput	(iv) Secondary storage
(e) Context switch	(v) Number of processes completing their execution per unit of time
	(vi) Saving the state of the old process and loading the saved state of the new process
	(vii) Memory management scheme.

SECTION – B

Marks – 45

2. (a) Define the terms : multiprogramming, multitasking and multithreading. 3

   (b) Explain the workstation-server model of distributed system stating its advantages and disadvantages. 7

3. (a) Differentiate between : 5

   (i) Internal fragmentation and external fragmentation.

   (ii) Preemptive scheduling and non-preemptive scheduling.

(b) Consider the following page reference string : 1, 2, 3, 4, 1, 2, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6.

How many page faults will occur for the following page replacement algorithms ?

Assume a set of three page-frames (initially all empty).

(i) FIFO (ii) LRU 5

4. (a) Write the four necessary conditions that cause deadlock in a system. 4

(b) Explain the Shortest Job First algorithm with the help of a suitable example. 6

5. Write short notes on any *three* : 5×3=15

(i) DMA

(ii) Resource Allocation Graph

(iii) Distributed database

(iv) Semaphore

(v) Function of Operating System

(vi) File Attributes.