

B.TECH. SEM -VI (COMPUTER) 2014 COURSE (CBCS) :

SUMMER - 2018

SUBJECT: OPERATING SYSTEM

Day : **Friday**

Time: **02.30 PM TO 05.30 PM**

Date : **01/06/2018**

S-2018-2405

Max. Marks: 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Use of non-programmable calculator is **ALLOWED**.
- 3) Figures to the right indicate **FULL** marks.
- 4) Draw a neat and labeled diagram **WHEREVER** necessary.
- 5) Assume suitable data, if necessary.

Q.1 a) Define operating system. What are the objectives and functions of operating system? (05)

b) What is Kernel? Explain the difference between monolithic kernel and Micro-kernel. (05)

OR

a) What is the purpose of system calls, and how do system calls relate to the operating system concept of dual mode (kernel / user) operation? (05)

b) Differentiate between multiprogramming, multiprocessing and multitasking systems. (05)

Q.2 a) What is IPC? Explain direct and in-direct communication with respect to message passing system. (05)

b) What are semaphores? Explain binary and counting semaphores with an example. (05)

OR

a) Describe the actions taken by a kernel and thread library to perform context switch among processes. (05)

b) Explain which of the following scheduling algorithms could result in starvation? (05)
(i) FCFS, (ii) RR, (iii) SJF, (iv) Priority

Q.3 a) List various deadlock prevention techniques. Explain any one in detail. (05)

b) What is deadlock? What are necessary conditions an operating system must satisfy for a deadlock to occur? (05)

OR

a) Justify the usefulness of Banker's algorithm in an operating system. (05)

b) A safe state is not a deadlock state, but a deadlock state is an unsafe state. Explain. (05)

Q.4 Explain paging in detail. Describe how logical address is converted to physical address. (10)

OR

Consider the page reference strings: 1,2,3,4,2,5,3,4,2,6,7,8,7,9,7,8,2,5,4 and 9. (10)
How many page faults would occur for LRU, FIFO and optimal page replacement algorithms when the number of frames is three?

Q.5 What is File? Explain in detail different file allocation methods. (10)

OR

Describe in detail the different techniques of disk scheduling. (10)

Q.6 Explain in detail the process management in LINUX. (10)

OR

Define virtualization. How virtual machines are implemented using VMware? (10)
State the benefits of using virtual machines.