Roll No. ☐☐☐☐☐☐☐☐☐☐☐   Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Information Technology) (2018 Batch)   (Sem.–4)
OPERATING SYSTEMS
Subject Code : BTIT-402-18
M.Code : 77539

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :
1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Q1 Write briefly :

a) Differentiate between hard real time and soft real time system.

b) Explain in brief about Multiprogramming systems.

c) What is meant by the state of the process?

d) Explain the term Race Conditions in reference to Inter-process communication.

e) What do you mean by Mutual Exclusion? Why mutual exclusion is required?

f) Explain the difference between logical and physical addresses.

g) Differentiate between internal and external fragmentation.

h) What are the methods for handling deadlocks?

i) Define Seek Time and Rotational Latency.

j) How free-space is managed using bit vector implementation? List its advantages.

SECTION-B

Q2   Explain in details about following types of OS :

    a)   Time Sharing System   (2.5)

    b)   Parallel System   (2.5)

Q3   Explain the following terms in detail in reference to process scheduling :

    a)   Types of schedulers   (2.5)

    b)   Multiprocessor scheduling   (2.5)

Q4   Define the term Deadlock. Explain deadlock prevention in detail.   (5)

Q5   Write a detailed note on Paging scheme of memory management.   (5)

Q6   Write a detailed note on Direct Memory Access.   (5)

SECTION-C

Q7   a)   Write a brief note on threads.   (5)

    b)   Explain the Contiguous and Linked File allocation Methods in detail.   (5)

Q8   Explain the following terms related to Inter-Process Communication :

    a)   Peterson's Solution   (5)

    b)   Semaphores   (5)

Q9   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 FIFO, Optimal Page replacement and LRU with three free frames which are empty initially. Which algorithm gives the minimum number of page faults?   (10)

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.