B.Tech. SEM -VI (Computer) 2014 Course (CBCS) : WINTER - 2018

SUBJECT: OPERATING SYSTEM

Day: Tuesday | Time: 10.00 AM TO 01.00 PM

Date: 13/11/2018 | **W-2018-2460** | 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.

Q1. What are the system components of the Operating system and explain them in detail. **(10)**

OR

Q1. Explain in detail layered Operating system structure. How it is superior compared to monolithic structure? Justify. **(10)**

Q2. What is critical section problem? Explain Readers-Writers problem. Give a solution to Readers-Writers problem using Monitors. **(10)**

OR

Q2. What is thread and Process? What are the benefits of multithreaded programming? Differentiate between user threads and kernel threads. **(10)**

Q3. A system has four processes P1 through P4 and two resource types R1 and R2. It has 2 Units of R1 and 3 Units of R2. Given that
P1 requests 2 units of R2 and 1 unit of R1,
P2 holds 2 units of R1 and 1 unit of R2,
P3 holds 1 unit of R2,
P4 requests 1 unit of R1.
Show the resource graph for this state of the system. Is the system in deadlock? And if so which processes are involved. **(10)**

OR

Q3. Explain in detail deadlock avoidance using Banker's algorithm with suitable example. **(10)**

Q4. What is demand paging? With a diagram explain the following with respect to demand paging:
i) Page Faults,
ii) Page in and Page out operations,
iii) Page replacement. **(10)**

OR

Q4. Explain the FIFO page replacement policy and LRU page replacement policy. Find the number of page faults for the following page reference strings using the FIFO and LRU page replacement strategies.
Page reference strings: 5,4,3,2,1,4,3,5,4,3,2,1,5. Assume page frames as 3. **(10)**

Q5. Discuss about the various file allocation methods. What are the possible structures for Directory? Discuss them in detail. **(10)**

OR

Q5. Discuss the various attributes of a File. List the various operations carried out on the directories. Explain the mounting of the file system. **(10)**

Q6. Illustrate the procedure for setting the XEN on Linux host and adding the guest operating system. **(10)**

OR

Q6. Explain in detail the Architecture and application I/O interface with diagram for Android OS. **(10)**

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