Srinivasa Ramanujan Institute of Technology
(AUTONOMOUS)
Rotarypuram Village, B K Samudram Mandal, Ananthapuramu - 515 701

III B. Tech I Sem – Semester End Examinations – Supplementary - Jul 2022

Subject Name: OPERATING SYSTEMS   **Subject Code: 194GA05503**

Name & Signature of the Examiner: Mr. M. Narasimhulu

| AY: 2021-22 | **Scheme of Evaluation** | SRIT R19 |

PARTA
(Compulsory Question)
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1 Answer the following: (10 X 02 = 20 Marks)

a) The user interface (UI) is the point of human-computer interaction and communication in a device. This can include display screens, keyboards, a mouse and the appearance of a desktop. It is also the way through which a user interacts with an application or a website.   **2M**

b) Distributed System is a collection of autonomous computer systems that are physically separated but are connected by a centralized computer network that is equipped with distributed system software. The autonomous computers will communicate among each system by sharing resources and files and performing the tasks assigned to them.   **2M**

c) The Monitor is a module or package which encapsulates shared data structure, procedures, and the synchronization between the concurrent procedure invocations.   **2M**

d) Mutual exclusion is a property of process synchronization which states that "no two processes can exist in the critical section at any given point of time". The term was first coined by Dijkstra. Any process synchronization technique being used must satisfy the property of mutual exclusion, without which it would not be possible to get rid of a race condition.   **2M**

e) A deadlock is a situation in which two computer programs sharing the same resource are effectively preventing each other from accessing the resource, resulting in both programs ceasing to function.   **2M**

f) Thrashing is caused by under allocation of the minimum number of pages required by a process, forcing it to continuously page fault. The system can detect thrashing by evaluating the level of CPU utilization as compared to the level of multiprogramming. It can be eliminated by reducing the level of multiprogramming.   **2M**

g) List the file types: executable, object, Source code, batch, text, word processor, library, print or view, archive, multimedia   **2M**

h) Read, open, write, seek, delete, truncate close and append   **2M**

i) Access Matrix is a security model of protection state in computer system. It is represented as a matrix. Access matrix is used to define the rights of each process executing in the domain with respect to each object. The rows of matrix represent domains and columns represent objects. Each cell of matrix represents set of access rights which are given to the processes of domain means each entry(i, j) defines the set of operations that a process executing in domain Di can invoke on object Oj.   **2M**

j) Cryptography is associated with the process of converting ordinary plain text into unintelligible text and vice-versa. It is a method of storing and transmitting data in a particular form so that only those for whom it is intended can read and process it. Cryptography not only protects data from theft or alteration, but   **2M**

can also be used for user authentication.

PARTB
(Answer all five units, 5 X 10 = 50 Marks)
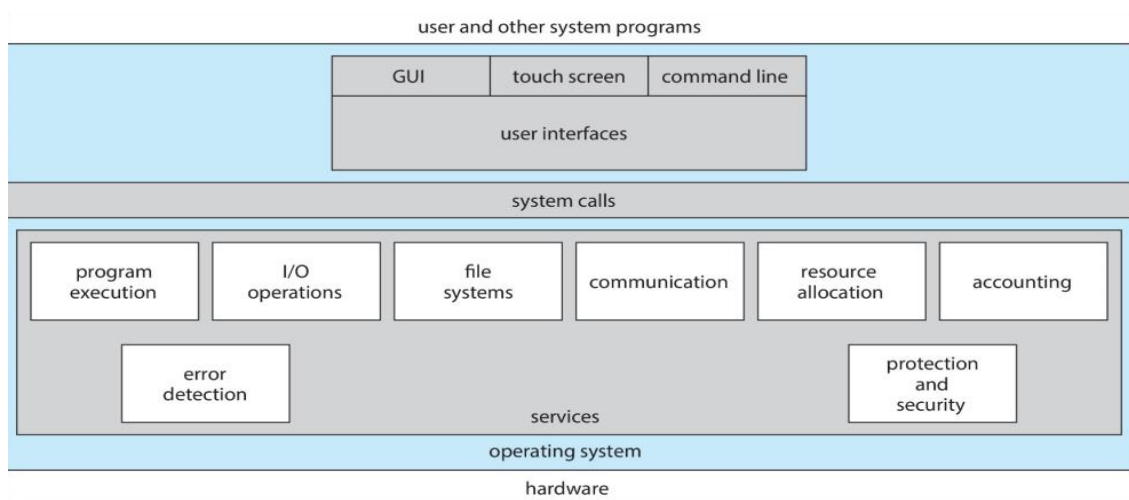### UNIT1

2 a) Operating System definition (1M)   5M

Explanation about each perpective roles (4M)

b) User interfaces, program execution, I/O operations, fileSystem manipulation,   5M
communications,resource allocations, logging, projection & security **(1M),**

Explanation about diagram shown below(1M)

3M

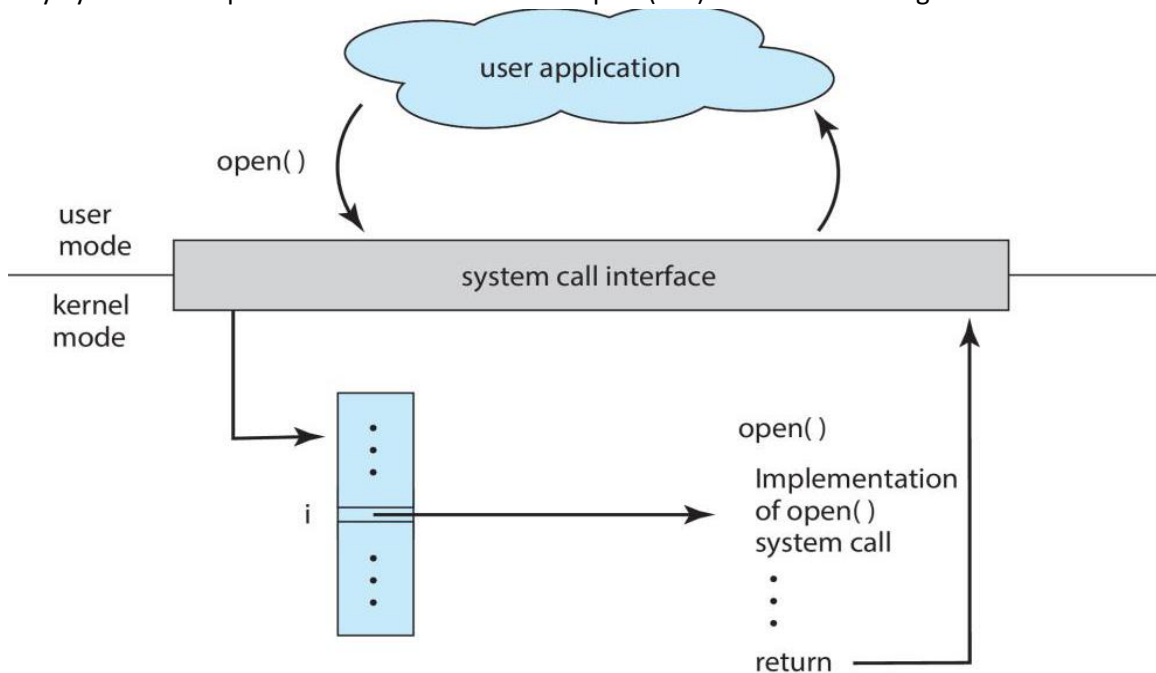**(OR)**

3 a) System call Definiton (1M)   5M
Listing various system calls (1M)
Any System call expalnation with a suitable examples (3M) . Refer below Diagram

b) Explanation about process management (3M) and memory management activities (2M)   5M

UNIT2

4 a) Process Definition (1M)   5M
Process state diagram (2M)
Explanation of Process state diagram (2M)

    b) Semaphore Definition (1M)   5M
Explanation of Semaphore with an example (4M)

(OR)

5 a) Explanation of scheduling criteria for comparing scheduling Algorithms   5M

    b) Critical Section Problem Defintion (1M)   5M
Explanation of Critical Section Problem using petersons solution.

UNIT3

6 a) Stucture of a page table diagram (2M)   5M
Explanation of Structure of Page table (3M)

    b) Working principle of page repacement Algortihms (2M)   5M
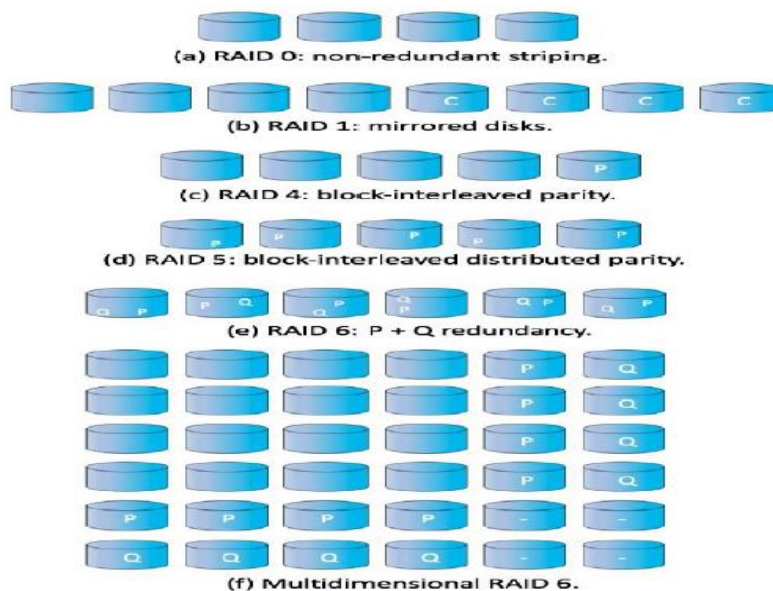Solve the LRU algorithm by considering an example (3M)

(OR)

7 a) Explantion of dead lock models with suitable exmples.   5M

    b) Dead lock Avoidance explanation using bankers algortihm.   5M

UNIT4

8 Classification of various disk scheduling algortihms (1M)   5M
Expalnation of any two disks scheduling Algorithms. (2M+2M=4M)

(OR)

9 a) Diagram of RAID structure Levels shown below**(2M)**   5M
Explanation about each level **(3M)**

(a) RAID 0: non-redundant striping.

(b) RAID 1: mirrored disks.

(c) RAID 4: block-interleaved parity.

(d) RAID 5: block-interleaved distributed parity.

(e) RAID 6: P + Q redundancy.

(f) Multidimensional RAID 6.

    b) Definition of file(1M)   5M
Explanation on File attributes (2M)
Explanation of File Operations (2M)

UNIT5

10 a) Explanation of threats with suitable examples.   5M

    b) **Explanation of Goals of Protection:** A protection model should exist to define a goals of protection.   5M
        Suppose In one protection model, computer consists of a collection of objects, hardware or software.
        Each object has a unique name and can be accessed through a well defined set of operations. The
        goal of Protection is to ensure ensure that each object is accessed correctly and only by those
        processes that are allowed to do so.

(OR)

11 a) Access control using access matrix description (2M)   5M
        Implementation explanation with suitable example. (3M)

    b) Importance of System Security (2M)   5M
        Explanation about System Security (3M)