Note : 1) All Questions are compulsory.
       2) Figures to right indicate marks.

Q.1   **A) Attempt All (Each of 5 marks)**   **(15)**
Multiple choice Questions   **(05)**

i) On some system binary semaphores are known as locks- which provide mutual exclusion

  a) mutex   b) 2PL   c) Permanent   d) Semaphore

ii) _____ Increase CPU utilization by organizing Jobs so that the CPU always has one to execute.

  a) memory   b) processor   c) scheduling   d) multiprogramming

iii) _____ on a temporary basis.
  a) ROM   b) Memory   c) cache   d) RAM

iv) In memory management _____ registers a logical address space.
  a) a base and a limit   b) Program counts & temporary
  c) Instruction & limit   d) Accumulator and a base.

v) The _____ time is the time for the disk arm to move the heuds to the cylinder containing the desired sector.
  a) Latency   b) response   c) rotational   d) seek.

B) Fill in the blanks
(SCAN,thread library, CPU, Logical address, Page number segment number logical address)   **(05)**

i) An address generated by CPU is commonly referred to as a _____.
ii) A _____ provides the programmers with an AP1 for creating and managing threads.
iii) _____Bound process generates 1/0 request in frequently using more of its time doing computation.
iv) In the _____ algorithm the disk arm starts at one of the disk and moves. Toward the end servicing request as it reaches each cylinder, until it gets to the other end of the disk.
v) Every address generated by the CPU is divided in two part a_____ and a page offset.

C. Answer following questions in one are two sentences.   **(05)**
i) Define starvation?
ii) What is PCB
iii) Define Trashing
iv) Enlist the contents of file control block?
v) What is file shearing.

Q.2.   **Answer the following (Any three)**   **(15)**
a) Explain time sharing operating system.

b) Explain process states in detail.
c) Write a note on – Multithreading models with Example.
d) What is operating system? Explain operating system structure in detail.
e) Write a note on client seven computing and peer to peer computing.
f) What are Distributed systems give their advantages.

Q.3.   **Answer the following (Any three)**   **(15)**
a) What is mean by synchronization hardware?
b) Write a note on – Readdress-writers problem.
c) Consider following set of process with length by CPU Arrival time and burst time of these process using FCFS

Process	Arrival time	Burst time
P1	0	4
P2	1	3
P3	2	1
P4	3	2
P5	4	5

d) Explain deadlock characterization.

e) What is wait for graph?

f) Write a note on – Banker's Algorithm

(15)

Q.4. Answer the following (Any three)
a) Write differences between logical and physical address.

b) Write a note on segmentation.

c) Explain LRU page replacement algorithm with example.

d) Assume there are three free frames find out Belady's Anomaly for 4 free frames. if given reference string is as 1,2,3,4,5,6,1,2,3,4,5 use optimal replacement.

e) Explain C- SCAN Scheduling in detail with example.

f) Explain the concept as file system mounting.

(15)

Q.5. Attempt the following (Any Three)
a. Explain allocation Methods.

b. Write a short note on file operations'.

c. What is virtuous memory Explain in detail.

d. Explain the working by TLB.

e. What are the benefits of multithreaded programming.

f) Explain the scheduling criteria.

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