**Rajasthan Institute of Engineering & Technology,Jaipur.**

**I Mid Term examination(SET-A)**

**V Semester & CSE Branch**

**OPERATING SYSTEM (5CS5)**

Time: 2hrs. M.M.:20

**Instruction for students:**

1. No provision for supplementary answer book.

Q.1(A) Explain OS as a virtual machine and as Resource manager.

(B) What is the difference between process and program? Explain different states of process.

OR

Q.1) Write short note on (ANY TWO):

* BIOS
* Types of OS
* Multilevel feedback queue scheduling
* Boot Strap Loader

Q.2 what is thread? Differentiate between process and thread. Describe multithreaded model.

OR

Q.2 (a) What are the criteria/goals/performance metrics for CPU Scheduling?

(b) Explain fair share scheduling.

Q.3 Consider the following set of processes, with the length of the CPU-burst time given

in milliseconds:

Process Burst Time Priority

P1 10 3

P2 1 1

P3 2 3

p4 1 4

P5 5 2

The processes are assumed to have arrived in the order PI, P2, P3, P4, P5, all at time 0.

1. Draw four Gantt charts illustrating the execution of these processes using FCFS, SJF, a no preemptive priority (a smaller priority number implies a higher priority), and RR (quantum = 1) scheduling.

b. What is the turnaround time of each process for each of the scheduling algorithms in part a?

c. What is the waiting time of each process for each of the scheduling algorithms in part a?

d. Which of the schedules in part a results in the minimal average waiting time (over all processes)?

OR

Q.3 (a) Describe long, medium and short term schedulers.

(b) Explain Preeemptive and non preemptive scheduling.

Q.4 (a) what are the four necessary conditions for the occurrence of deadlock.

(b)What do you mean by resource allocation graph. Explain RAG with deadlock and without deadlock

OR

Q.4Consider the following snapshot of a system: ~

Allocation Max Available

ABCD ABCD ABCD

Po 0012 0012 1520

P1 1000 1750

P 1354 2356

P3 0632 0652

P4 0014 0656

Answer the following questions using the banker's algorithm:

a. What is the content of the matrix Need?

b. Is the system in a safe state?

c. If a request from process P1 arrives for (0,4,2,0), can the request be

granted immediately?

**Rajasthan Institute of Engineering & Technology, Jaipur.**

**I Mid Term examination (SET-B)**

**V Semester & CSE Branch**

**OPERATING SYSTEM (5CS5)**

Time: 2 hrs. M.M.:20

**Instruction for students:**

1. No provision for supplementary answer book.

2.

Q.1 (A) What do you mean by operating system? Explain layered architecture of operating

system.

(B) Differentiate process and program. Also describe PCB and it’s content. OR

Q.1) List five services provided by an operating system that are designed to make it more convenient for users to use the computer system.

Q.2 Differentiate process and thread. Explain multithreading models with suitable example.

OR

Q.2 Describe any two of the following:

* 1. Thread Usage and Its Benefits
  2. Process Creation
  3. System calls
  4. Kernel and User level threads

Q.3 Calculate average turn around time and average waiting time for following load of jobs, if jobs are scheduled using FCFS and SJF scheduling algorithms:

Load: e (p0)=350

e (p1)=125

e (p2)=475

e (p3)=250

e (p4)=75

where e(pi) is service time for job i in the load of jobs.

OR

Q.3 what is preemptive and non-preemptive scheduling? Discuss one preemptive and one non-preemptive scheduling algorithm.

Q.4 (a) What are the four necessary conditions for the occurrence of the deadlock.?

(b) Explain banker’s algorithm for deadlock avoidance

OR

Q.4 (a) Explain deadlock Prevention with example.

(b)What do you mean by resource allocation graph.? Explain RAG with deadlock and

without deadlock