Progressive Education Society's
Modern College of Arts, Science & Commerce Ganeshkhind, Pune – 16
(Autonomous)
End Semester Examination: OCT / NOV 2024
Faculty: Science and Technology

Program: BSc(Comp05) **Semester: V** **SET: A**
Program (Specific): (Computer Science) **Course Type: DSEC-III**
Class: T.Y.BSc(Computer Science) **Max.Marks: 35**
Name of the Course: Operating system **Time: 2Hr**
Course Code: 24CS351
Paper: I

Instructions to the candidate:

1) *There are 4 sections in the question paper. Write each section on separate page.*
2) *All Sections are compulsory.*
3) *Figures to the right indicate full marks.*
4) *Draw a well labeled diagram wherever necessary.*

SECTION: A

Q1) Multiple Choice Question **[5×1=5]**

1) What else is a command interpreter called?
   a) Prompt b) kernel
   c) Shell d) command
2) BIOS is used for_____
   a) By operating system b) By compiler
   c) By interpreter d) By application software
3) What is bootstrapping called?
   a) Cold boot b) Cold hot boot
   c) Cold hot strap d) Hot boot
4) _____is a semaphore with an integer value that can range in between 0 and 1.
   a) Binary semaphore b) counting semaphore
   c) Mutual exclusion d) Race condition
5) program always deals with _____
   a) logical address b) absolute address
   c) physical address d) relative address

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Q2) Very short answer questions (Attempt any 4/6) **[4×1=4]**

1) Define I/O bound process.
2) "The medium-term scheduler only runs in times of high resource contention, as when physical memory is full". State True/False.
3) List the advantages of an open-source operating system.
4) What is booting in the OS?
5) "When a new process is forked in UNIX, it retains access to the parent's open files."True/False.
6) Define synchronization.

SECTION: B

Q3) Short answer questions (Attempt any 4/6) **[4×2=8]**

1) Define kernel with diagram.
2) Write the benefits of virtual memory.
3) State the critical section problem.
4) List out functions of memory management.
5) Define independent and dependent processes.
6) List the types of schedulers and also explain short term schedulers in detail.

SECTION: C

Q4) Short answer questions (Attempt any 4/6) **[4×2=8]**

1) Write the system calls under the category of process management.
2) Enlist the purpose of scheduling algorithms.
3) Discuss the role of dispatcher.
4) Compare preemptive and non preemptive scheduling.
5) Define operating system. List objectives of operating system.
6) Compare LFU and MFU with two points.

SECTION: D

Q5 Attempt any two of the following (2/4) **[5×2=10]**

1) Consider the following set of processes CPU time given in milliseconds. Illustrate execution of processes using FCFS and preemptive SJF CPU scheduling algorithm and calculate turn around time, waiting time, average turnaround time, average waiting time.

PROCESS	BRUST Time	ARRIVAL TIME
P0	5	1
P1	3	0
P2	2	2
P3	4	3
P4	8	2

2) Explain the multithreading model in detail.

3) Explain fragmentation and types of Fragmentation.

4) Consider a reference string: 4, 7, 6, 1, 7, 6, 1, 2, 7, 2. the number of frames in the memory is 3. Find out the ratio of page faults using FIFO Page Replacement Algorithm.