Total No. of Questions : 12]

SEAT No. :

**P1801**

[Total No. of Pages :3

# [4761] - 303
# S.Y.M.C.A. (Engg.)
# OPERATING SYSTEM
## (2013 Course) (410903) (Semester - III)

*Time : 3 Hours]* *[Max. Marks : 50*

***Instructions to the candidates:***

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right side indicate full marks.***
3) ***Assume Suitable data if necessary.***

***Q1)*** a) Write a short note on: **[4]**

i) Linker

ii) Loader

b) Explain the importance of system software for a computers. **[5]**

OR

***Q2)*** a) Differentiate between a compiler and an interpreter with proper examples. **[4]**

b) Define an assembler, how does an assembler work? Explain the working of an assembler with supportive block diagram. **[5]**

***Q3)*** a) Define scheduling. Explain the performance parameters of scheduling criteria. **[4]**

b) Enlist the services provided by operating system. Discuss the hierarchical structure to design operating system. **[4]**

OR

***P.T.O.***

***Q4)*** Solve the following question using CPU Scheduling Algorithm Consider following set of jobs: **[8]**

| Job | Arrival Time | Run Time |
|---|---|---|
| 1 | 19 | 2 |
| 2 | 07 | 3 |
| 3 | 22 | 1 |
| 4 | 34 | 2 |

Determine finish time and turn around time using following methods.

1) Round Robin. (assume quantum = 5)
2) SJF.

***Q5)*** a) Write short note on: **[4]**

i) Critical section.

ii) Mutual Exclusion.

b) Explain necessary conditions for deadlock to occur. **[4]**

OR

***Q6)*** a) Explain the classic problem of Synchronization. **[4]**

b) How to avoid deadlock, explain with example. **[4]**

***Q7)*** a) Write difference between contiguous and non-contiguous memory allocation. **[4]**

b) What is page fault rate? Explain with an example. **[5]**

OR

***Q8)*** a) Why demand paging approach is preferred over segmentation? Explain. **[4]**

b) Consider the following page reference string 1, 2, 3, 4, 2, 1, 5, 6, 1, 2, 3, 7. Number of page frames are three. Show the page trace and calculate number of page faults for the following page reference schemes. **[5]**

i) Optimal.

***Q9)*** a) Explain two level, tree structured and a cyclic graph directories. **[4]**

b) Explain C Scan algorithm with example. **[4]**

OR

***Q10)***a) Explain Virtual File System. **[4]**

b) Draw a neat diagram of linked allocation method & explain. **[4]**

***Q11)***Explain the following components of a Linux system. (any two) **[8]**

a) Kernel.

b) System libraries.

c) System utilities.

OR

***Q12)***a) List process management system calls and explain any two. **[4]**

b) What are the 2 major functionalities of a Linux Kernel? **[4]**