Total No. of Questions : 8]

SEAT No. :

P2579

[Total No. of Pages : 2

[5153]-555
T.E. (E & T.C.)
SYSTEM PROGRAMMING AND OPERATING SYSTEM
(2012 Pattern) (Semester - I) (Endsem.)(304185)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume Suitable data if necessary.***

Q1) a) Explain in brief imperative statements, declaration statements and assembler directives with examples for assembly language programming. **[9]**

b) Explain advanced macros facilities with examples. **[6]**

c) Explain phases of compiler with examples. **[5]**

OR

Q2) a) Explain translated origin,link origin, and load origin. **[6]**

b) Explain lexical analysis, syntax analysis, and semantic analysis for Language processor. **[9]**

c) What is difference between compiler and Interpreter? **[5]**

Q3) a) Explain following CPU scheduling techniques with examples. **[6]**

i) FCFS ii) SJF

b) What is difference between starvation and deadlock? Explain it with the help of 'Dining Philosophers Problem'. **[6]**

c) What is Bankers algorithm? Explain it with suitable examples. **[6]**

OR

Q4) a) What is Producer–Consumer Problem? How to solve it using SemaPhore and Mutex? **[6]**

b) What are the various states of a processes and how it is managed by operating system? **[6]**

P.T.O.

c) Consider the following processes where Arrival and Burst time (in seconds) are as shown below.

process	Burst Time	Arrival Time
P1	13	3
P2	15	3
P3	08	1
P4	12	1

Calculate the Average Waiting Time and Average turn-around Time if the processes are scheduled using SJF. **[6]**

Q5) a) Explain memory management with Bit Map method and with Linked Lists method. **[5]**

b) What do you mean by page replacement algorithm? Enlist different page replacement algorithms. **[5]**

c) Consider the following page reference string: 7, 1, 2, 1, 2, 5, 4, 5, 9, 4, 9, 8, 1, 3. The number of page frames = 3, calculate the page faults and the hit ratio for First In First Out Page replacement algorithm. **[6]**

OR

Q6) a) How logical address is converted into physical address by memory management unit? Explain it with example. **[5]**

b) What is structure of typical page table entry? What is significance of modified bit, referenced bit, protection bits, and present/absent bit in page table entry? **[6]**

c) Explain how LRU page replacement algorithm is simulated in software? **[5]**

Q7) a) What are different file types and how to access it. **[6]**

b) What is difference between programmed I/O and I/O mapped I/O. **[4]**

c) Explain input output software layers. **[6]**

OR

Q8) a) Explain Programmed I/O, Interrupt driven I/O, and I/O using DMA with examples. **[9]**

b) Explain in detail file systems and its implementation. **[7]**