Total No. of Questions : 8] **SEAT No. :**

P2432 **[Total No. of Pages : 2**

[5253] - 155
T.E. (E & TC)
SYSTEM PROGRAMMING AND OPERATING SYSTEM
(2012 Pattern)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Answer Q1 or Q2,Q3or 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) Write short note on MS DOS linker. **[7]**

b) Define language processor. Also explain various language processing tools. **[7]**

c) What are the differences between Macros and Functions? **[6]**

OR

Q2) a) Show parsing steps of <id>+<id>*<id> according to the following grammar: **[7]**

E ::= TE”

E” ::= +E | ε (epsilon)

T ::= VT”

T” ::= *T | ε (epsilon)

V ::= <id>

b) Explain the advance macro facilities **[7]**

i) Alteration of flow of control during expansion

ii) Expansion time variables

iii) Attributes of parameters

c) Explain software tools for program development. **[6]**

Q3) a) Explain dining philosophers problem and Producer Consumer problem **[6]**

b) Explain Process Control Block (PCB) in details. **[6]**

c) What are the 4 ways of handling deadlocks? Explain each with an example. **[6]**

P.T.O.

OR

Q4) a) Explain the concept critical region and mutual exclusion with examples. **[6]**

b) What are threads? How are they different from processes? List different types of thread models. **[6]**

c) Consider the following processes where Arrival and Burst time are as shown below. **[6]**

Process	Burst Time	Arrival Time
P1	05	0
P2	04	2
P3	07	3
P4	06	5

Calculate the Average Waiting Time and Average Turn-around Time if the processes are scheduled using FCFS.

Q5) a) Consider the following Page reference string :8, 1, 3, 1, 8, 6, 4, 3, 8, 4, 8, 7, 1, 2 The number of page frames = 3, calculate the page faults and the hit ratio for Least recently used algorithm. **[8]**

b) Explain Virtual Memory with Segmentation **[8]**

OR

Q6) a) Explain design issues in paging. What is Demand paging? Explain with example. **[8]**

b) Explain the First fit, Best fit and Worst fit algorithms with example. **[8]**

Q7) a) Explain Linux file system **[8]**

b) Explain I/O software layers with diagram **[8]**

OR

Q8) a) Write short note on magnetic disks and optical disks. **[8]**

b) Explain Interrupt driven I/O and I/O using DMA. **[8]**