Total No. of Questions : 10]

SEAT No. :

P3924

[Total No. of Pages : 3

[4758] - 602

T.E. (Information Technology) (Semester - II)

OPERATING SYSTEMS

(2012 Pattern)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates:

1) ***Answer Q 1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.***
2) ***Figures to the right hand indicate full marks.***
3) ***Neat diagrams must be drawn wherever neccessary.***
4) ***Assume suitable data, wherever necessary.***

Q1) a) Describe the evolution of Operating Systems. **[5]**

b) Explain fork and execve system calls. Also state their relationship. **[5]**

OR

Q2) a) Differenciate between kernel-level and user-level threads. **[5]**

b) Explain Traditional UNIX Scheduling with example. **[5]**

Q3) a) How can a programming language be used to provide mutual exclusion? Explain with example. **[5]**

b) What are different requirements for mutual exclusion? **[5]**

OR

Q4) a) Write and explain the deadlock-free solution for a dining Philosophers Problem. **[5]**

b) Explain any two ways of creating unnamed pipes in Linux with example. **[5]**

P.T.O.

Q5) a) What are the distinctions among logical, relative, and physical addresses? **[6]**

b) Why is the capability to relocate processes desirable? Explain in detail. **[6]**

c) Explain two-level page table organization for implementing virtual memory. **[6]**

OR

Q6) a) Write a short note on Buddy system. **[6]**

b) For the following page reference string 5, 6, 7, 8, 5, 6, 9, 5, 6, 7, 8, 9, show and count the number of page faults that occur with three frames using FIFO, LRU and optimal page replacement methods. **[12]**

Q7) a) Define following terms. **[6]**

i) Seek time

ii) Rotational Latency

iii) Transfer time

b) Assume the disk head is initially positioned over track 100.For the disk track request 27, 129, 110, 186, 147, 41, 10, 64, 120 how disk scheduling is done for FIFO Scan algorithms. Calculate average seek length and show the tracing of request. **[6]**

c) Explain different I/O buffering techniques. **[4]**

OR

Q8) a) List and briefly define any two file allocation methods. **[6]**

b) What are the functions of a file management system? **[6]**

c) What are typical operations that may be performed on a directory? **[4]**

Q9) a) Write a pseudo - code for simple kernel module and explain procedure of inserting a new module in existing kernel with all necessary steps. **[8]**

b) With neatly labelled diagram explain architecture of embedded OS. **[8]**

OR

Q10) Write features of the following (any three) **[16]**

a) NACH OS

b) Ubuntu EDGE

c) Embedded Linux

d) Android OS

e) Service Oriented OS