QPC: RA20BTECH883 AY 20 Reg. No | | | | | | | | | | |

GIET UNIVERSITY, GUNUPUR – 765022

B. Tech (Eight Semester – Regular) Examinations, April– 2024

BPECS8011 - Operating System Security

(CSE & CST)

Time: 3 hrs Maximum: 70 Marks

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions) **(1 x 10 = 10 Marks)**

	Q.1. Answer ***ALL*** questions	[CO#]	[PO#]
a.	_____is a situation when a program misbehaves only when certain conditions met otherwise it works as a genuine program. (i) Trojan Horse (ii) Trap Door (iii) Logic bomb (iv) Virus	CO2	PO1
b.	Which of the following type provides protection and user accountability using audit capabilities? (i) Type A (ii) Type B (iii) Type C (iv) Type D	CO3	PO1
c.	What are the major components of the intrusion detection system? (i) Analysis Engine (ii) Event provider (iii) Alert Database (iv) All of the above	CO2	PO3
d.	When the suspended process is moved to the secondary storage. This process is called? (i) process mix (ii)Swapping (iii)Swap-In (iv)Swap-Out	CO2	PO1
e.	Which system makes sure that all critical processes are completed within the given time frame? (i)Hard (ii)Soft (iii)Simple (iv) Complex	CO3	PO1
f.	Which of the following condition is required for a deadlock to be possible? (i) mutual exclusion (ii) a process may hold allocated resources while awaiting assignment of other resources (iii) no resource can be forcibly removed from a process holding it (iv) all of the mentioned	CO4	PO3
g.	What is the drawback of banker's algorithm? (i) in advance processes rarely know how much resource they will need (ii) the number of processes changes as time progresses (iii) resource once available can disappear (iv) all of the mentioned	CO3	PO2
h.	The content of the matrix Need is (i) Allocation – Available (ii) Max – Available (iii)) Max – Allocation (iv) Allocation – Max	CO1	PO2
i.	What are the characteristics of Host based IDS? (i) The host operating system logs in the audit information (ii) Logs includes logins,file opens and program executions (iii) Logs are analysed to detect tails of intrusion (iv) All of the mentioned	CO2	PO3
j.	To ensure no preemption, if a process is holding some resources and requests another resource that cannot be immediately allocated to it (i) then the process waits for the resources be allocated to it (ii) the process keeps sending requests until the resource is allocated to it (iii) the process resumes execution without the resource being allocated to it (iv) then all resources currently being held are preempted	CO2	PO2

PART – B: (Short Answer Questions) **(2 x 10 = 20 Marks)**

Q.2. Answer ***ALL*** questions	[CO#]	[PO#]
a. Define system calls.	CO1	PO1
b. Differentiate between user level and kernel level threads.	CO2	PO1
c. Differentiate between multiprocessing and multiprogramming system.	CO1	PO2
d. Define Belady's anomaly.	CO2	PO1
e. Define Race condition.	CO2	PO2
f. Define the bound buffer problem.	CO1	PO1
g. Explain semaphore.	CO3	PO1
h. Discuss about two phase locking issues.	CO4	PO2
i. Define virus.	CO3	PO3
j. Give the mechanism of Honeypot in malware analysis.	CO4	PO2

PART – C: (Long Answer Questions) **(10 x 4 = 40 Marks)**

Answer ***ALL*** questions	Marks	[CO#]	[PO#]
3. a. Explain briefly different types of System calls.	5	CO1	PO1
b. Describe the functionalities of Operating Systems? Explain in detail.	5	CO1	PO2
(OR)			
c. Write the disadvantage of semaphore. Explain the solution for Dining-Philosophers Problem using monitor.	5	CO1	PO2
d. Briefly discuss the deadlock criteria. Describe the mechanism for Deadlock prevention and recovery.	5	CO1	PO1
4. a. Given memory partition of 100K, 500K, 200K, 300K, and 600K in order, how would each of the First-fit, Best-fit and Worst-fit algorithms place the processes of 212K, 417K, 112K and 426K in order? Which algorithm makes the most efficient use of memory? Show the diagram of memory status in each case	5	CO2	PO2
b. Define paging? What is Page Table? Explain the conversion of Virtual Address to Physical Address in Paging with example and block diagram.	5	CO2	PO3
(OR)			
c. Explain the different file access methods in detail.	5	CO2	PO2
d. How Do Biometrics and Passwords Compare? How to create a secure password.	5	CO2	PO1
5. a. Describe the two level and acyclic graph schemes for defining the logical structure of adirectory.	5	CO3	PO3
b. Suppose that a disk drive has 5000 cylinders, numbered 0 through 4999.The drive is serving a request at cylinder 143. FIFO order is, 86, 1470, 913, 1774,948,1509,1022,1750,130 starting from head position. What is total distance? FCFS, SSTF, SCAN, C SCAN, C-LOOK.	5	CO3	PO3
(OR)			
c. How Access Control List can be useful for managing file access?	5	CO3	PO3
d. Explain the various file directory structures in detail.	5	CO3	PO2
6. a. Write notes on virtualization technique for security.	5	CO4	PO2
b. Define malware. Discuss the different types of malware analysis in detail.	5	CO4	PO1
(OR)			
c. Discuss the methods for intrusion detection and virus protections.	5	CO4	PO3
d. Explain Digital rights management.	5	CO4	PO3

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