	Operating System
SOURCE: 01	Operating System (GATE EXAM)
01	Operating System Syllabus
02	Introduction to Operating System and Its Functions
03	Batch Operating System   Types of Operating System
04	Multiprogramming and Multitasking Operating System
05	Types of OS (Real Time, Distributed, Clustered and Embedded)
06	Process States in Operating System
07	Important Linux Commands
08	System Calls in Operating System and Its Types
09	Fork System Call with Example
10	Fork System Call with Explanation
11 12	<u>User Mode and Kernel Mode in Operating System</u> Process vs Threads in Operating System
13	User Level vs Kernle Level Thread in Operating System
14	Process Scheduling Algorithms (Preemption vs Non-Preemption)   CPU Scheduling
15	What is Arrival, Burst, Completion, Turnaround, Waiting and Response Time in CPU
16	First Come First Serve (FCFS) CPU Scheduling Algorithm with Example
17	Shortest Job First (SJF) Scheduling Algorithm with Example
18	Shortest Remaining Time First (SJF with Preemption) Scheduling Algorithm
19	Shortest Job First (SJF with Preemption) Scheduling Algorithm
20	Round Robin (RR) CPU Scheduling Algorithm with Example
21	Pre-emptive Priority Scheduling Algorithm with Example
22	Example of Mix Burst Time (CPU and I/O both) in CPU Scheduling
23	Multi-Level Queue Scheduling
24	Multilevel Feedback Queue Scheduling
25	Process Synchronization Process Types   Race Condition
26	Producer Consumer Problem   Process Synchronization Problem
27	Printer-Spooler Problem   Process Synchronization Problem
28	Critical Section Problem   Mutual Exclusion, Progress and Bounded Waiting
29	LOCK Variable in OS   Process Synchronization
30	Test and Set Instruction in OS   Process Synchronization
31	Tum Variable   Strict Alteration Method   Process Synchronization
32	Semaphores   Wait, Signal Operation   Counting Semaphore Examples
33	What is Binary Semaphore   Easiest Explanation
34	<u>Practice Question on Binary Semaphore</u>
35	Solution of Producer Consumer Problem Using Semaphore
36	Solution of Readers-Writers Problem Using Binary Semaphore
37	<u>Dining Philosophers Problem and Solution Using Semaphore</u>
38	DEADLOCK Concept Example   Necessary Condition
39	Resource Allocation Graph in Deadlock   Single Instance with Example
40	Multi-Instance Resource Allocation Graph with Example
41	Deadlock Handling Methods and Deadlock Prevention
42	Deadlock Avoidance Banker's Algorithm with Example
43 44	GATE Question on Banker's Algorithm   Deadlock Avoidance Question Explanation on Deadlock
45	GATE Question Explanation
46	Memory Management and Degree of Multiprogramming
47	Memory Management Techniques   Contiguous and Non-Contiguous
48	Internal Fragmentation   Fixed Size Partitioning   Memory Management
49	Variable Size Partitioning   Memory Management
50	First Fit, Next Fit, Best Fit, Worst Fit Memory Allocation
51	GATE Question Solved on First Fit, Best Fit and Worst Fit Memory Allocation
52	GATE Question Solved on First Fit, Best Fit and Worst Fit Memory Allocation with Timeline
53	Need of Paging   Memory Management
54	What is Paging   Memory Management
55	Question Explanation on Logical Address and Physical Address Space
56	Question Explanation on Paging   Memory Management
57	Page Table Entries Format of Page Table
58	2-Level Paging in Operating System   Multilevel Paging
59	Inverted Paging   Memory Management

60	Questions Paging in Operating System
61	What is Thrashing
62	Segmentation vs Paging   Segmentation Working
63	Overlay   Memory Management
64	Virtual Memory   Page Fault   Significance of Virtual Memory
65	<u>Translation Lookaside Buffer (TLB) in Operating System</u>
66	Numerical On Translation Lookaside Buffer (TLB)
67	Page Replacement Introduction   FIFO Page Replacement Algorithm
68	Belady's Anomaly in FIFO Page Replacement with Example
69	Optimal Page Replacement Algorithm
70	Least Recently Used Page Replacement Algorithm
71	Most Recently Used Page Replacement Algorithm
72	Hard Disk Architecture in Operating System
73	<u>Disk Access Time with Example   Seek Time Rotational Time and Transfer Time</u>
74	<u>Disk Scheduling Algorithm</u>
75	FCFS in Disk Scheduling with Example
76	SSTF in Disk Scheduling with Example
77	SCAN Algorithm in Disk Scheduling with Example
78	LOOK Algorithm in Disk Scheduling with Example
79	C-SCAN Algorithm in Disk Scheduling with Example
80	C-LOOK Algorithm in Disk Scheduling with Example
81	Question On Operating system
82	File System in Operating system   Windows, Linux, Unix, Android, Etc
83	<u>File Attributes and Operations in Operating System</u>
84	Allocation Methods in Operating System   Contiguous and Non-Contiguous
85	Contiguous Allocation in Operating System   Advantages and Disadvantages
86	Linked List Allocation in File Allocation whit Example
87	Indexed File Allocation in Operating System
88	<u>Unix Inode Structure with Numerical Example</u>
89	Protection and Security in Operating System
90	<u>Linker and Loader with Example</u>

Information Security		
SOURCE: 01	Cyber and Information Security	
01	<u>Information Security Basic Concepts</u>	
02	Information Security Management and Governance	
03	Cryptography Hashing Ciphering	
04	Message Authentication, SSL, TSL and Digital Signature	
05	Risk Management and Business Continuity Management	
06	Computer Security, Platform, Virtualization and Hyper-V	
07	<u>Digital Forensics and Incident Response, Evidence</u>	
08	<u>User Authentication, Passwords, Tokens and Biometrics</u>	
09	Identity Management and Access Control, OpenId	
10	Communication Security, TSL, TCP/IP, HTTPS, SSL	
11	Network Perimeter Security, Firewalls, Proxies	
12	Malicious Software, Attacks and Application Security	
12	Review and Recap – Project	
13	OWASP Top 10, Injection, XSS, Authentication Attack	