

| S.NO | PRIMARY TOPICS | SUB TOPICS | POINTS TO BE COVERED | DURATION (THEORY) HOURS / MIN |
|------|-----------------|--------------------------------|---|----------------------------------|
| 1 | Introduction | | | |
| | | Introduction to OS | What is OS & Why we need OS? What are the different types of OS? What is windows OS? What are the advantages & disadvantages of windows OS? | 120 |
| | | Workstation Server | What is windows workstation & windows server OS? List down the versions of Workstation & Server OS? What are the Minimum requirements need to install windows workstation & server OS? Features of Windows 7 & Server 2008 R2? | 60 |
| 2 | Windows kernel | | | |
| | | Architecture of Windows Kernel | Difference between windows 32 & 64 Bit architecture What is kernel? Types of kernel What is subsystem and types of subsystem? | 60 |
| | | Mode of Kernel | User mode Kernel mode | 40 |
| | | Components of Kernel | HAL Executive Services | 20 |
| | | Executive process | 1. Function of executive services 2. Object Types 3. Cache Controller 4. Configuration Manager 5. I/O Manager & it's Components 6. Local procedure call 7. Memory manager 8. Process Structure 9. PnP Manager 10. Security Reference Monitor 11. Graphic Device Drivers 12. Device Drivers | 120 |
| 3 | Booting process | | | |
| | | Pre boot sequence | POST, MBR, NTLDR | 60 |
| | | Boot sequence | Initial boot loader phase (ntldr) Operating system selection (boot.ini , bootsect.dos) Hardware detection (ntdetect.com) Configuration selection (HW profile/ configuration recovery menu) | 60 |
| | | Kernel load | Loads ntoskrnl.exe, hal.dll, registry, selects the control set) | 20 |
| | | Kernel Switches | Kernel Switches /3GB /PAE | 20 |
| | | Kernel initialization | HW key is created, Clone the control set, Load and initialize drivers, services are created(smss.exe) | 20 |
| | | Logon | Win32 subsystem (winlogon.exe, lsass.exe, screg.exe) Types of Logon (Normal logon, Domain logon) How does each logon process works During logon process how key is generated. Types of security (NTLM and Kerberos) Key files and registries that are getting used booting process | 60 |
| | | Remote booting & installation | How does it boot when there is multiple OS | 20 |
| | | Hibernation | Hibernating (booting flow) | 20 |

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| 4 | File system | | | |
| | | What is File System | Creating Files and Directories | 40 |
| | | | Opening & Reading Directories | |
| | | | Symbolic Links & Hard Links | |
| | | File | File attributes | 30 |
| | | Types of File system | Disk file system | |
| | | | Optical disks | |
| | | | Flash file system | |
| | | | Tape file system | |
| | | | Database file system | |
| | | | Network file system | |
| | | | Shared disk file system | |
| | | | Special file system | |
| | | Windows file system | FAT | 10 |
| | | | NTFS | |
| | | | File-System-Driver | |
| | | FAT | Versions | 60 |
| | | | Disk Structure | |
| | | | FAT naming convention | |
| | | | Advantages and Disadvantages of FAT File System | |
| | | NTFS | Versions | 60 |
| | | | Features | |
| | | | Disk Structure | |
| | | | Comparison between NTFS & FAT | |
| | | | Demo on Converting File system FAT to NTFS | |
| 5 | Management Mechanisms | | | |
| | | Registry | What is registry & its uses? | 80 |
| | | | Structure (Key & values, Hives) | |
| | | | Editing | |
| | | | Locations (Demo) | |
| | | | Backup & Recovery | |
| | | | Policy | |
| | | Services | What is Services.msc & it's Function | 80 |
| | | | List of services | |
| | | | Core services of windows and its functionalities | |
| | | | Service application | |
| | | | Service control program | |
| | | | Service control manager | |
| 6 | Device Management | | | |
| | | Device Driver | What is device Drivers? | 60 |
| | | | Device controller | |
| | | | How to install, Update and Uninstall Drivers | |
| | | Power Manager | 6 states | |
| 7 | Process Management | | | |
| | | Process & Threads | What is process | 120 |
| | | | Process states | |
| | | Processing types | Multiprocessing, Multitasking, Multithreading, Hyperthreading. | |

| 8 | Memory Management | | | |
|---|-------------------|-----------------------|---|-----|
| | | Virtual Address Space | Virtual address space & Physical storage Working set Page state Data execution prevention Memory protection Memory limits for windows Virtual address space 64 bits | 120 |
| | | Paging | What is Paging Types of Paging Thrashing Terminologies Fragmentation Tuning swap size | 100 |
| | | Memory Pool | What is memory pool Types of Pool | 20 |
| | | Virtual Memory | What is Virtual memory Functions of Virtual Memory Paged virtual memory Segmented virtual memory | 60 |