

B.Sc.- II (Data Science) NEP Semester-III
BSCDS035 - Operating System & Information Security

P. Pages : 1

Time : Two Hours



GUG/S/25/16143

Max. Marks : 40

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1. a) Explain the key functions of an operating system and their importance in managing resources. 4
- b) Discuss the role of a kernel in an operating system. 4
- OR**
- c) Define a programming system in the context of operating systems and explain how it supports software development. 4
- d) What is a deadlock in operating systems? Describe the methods to prevent or avoid it. 4
2. a) Explain the difference between physical and virtual address space in memory management. 4
- b) Compare different file allocation methods used by operating systems. 4
- OR**
- c) Differentiate between paging and segmentation in memory management. 4
- d) Explain the role of device drivers and I/O control in managing devices in operating system. 4
3. a) Define computer security. What are its key objectives, and why is it essential in modern Computing environments? 4
- b) What is public key encryption, and how does it differ from symmetric encryption? 4
- OR**
- c) Who are computer criminals, and what types of threats do they pose? 4
- d) Discuss the role of user authentication in system security. What are the various methods of authentication? 4
4. a) What are the primary security requirements for databases? 4
- b) What are the common network security threats, and what controls can be implemented to mitigate these threats? 4
- OR**
- c) Discuss the importance of reliability and integrity in database security. 4
- d) Discuss the role of organizational security policies in maintaining a secure environment. 4
5. a) Explain the difference between processes and threads. 2
- b) What is virtual memory? 2
- c) Explain the concepts of substitution ciphers and transposition ciphers in cryptography. 2
- d) Explain the function of firewalls in network security. 2
