

OS, NETWORKS AND PROTOCOLS

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	A real-time operating system is primarily used for _____ (i) File storage (ii) Immediate response in critical applications (iii) Browsing the internet (iv) Data backup	K1	CO1
	2	Deadlock prevention involves _____ (i) Avoiding circular wait, mutual exclusion, hold-and-wait (ii) Ignoring the problem (iii) Killing all processes (iv) Scheduling processes randomly	K2	CO1
2	3	Segmentation divides memory based on _____ (i) Fixed-size blocks (ii) Disk sectors (iii) Page frames (iv) Variable-size logical units such as code, data, stack	K1	CO2
	4	Access control mechanisms are used to _____ (i) Control CPU scheduling (ii) Restrict unauthorized access to resources (iii) Improve disk performance (iv) Encrypt data only	K2	CO2
3	5	Which network type covers a city or metropolitan area? (i) LAN (ii) WAN (iii) MAN (iv) PAN	K1	CO3
	6	IPv6 addresses are _____ (i) 32-bit (ii) 64-bit (iii) 128-bit (iv) 256-bit	K2	CO3
4	7	SNMP is mainly used for _____ (i) Network management and monitoring (ii) Secure web browsing (iii) Email delivery (iv) File sharing	K1	CO4
	8	Asymmetric encryption uses _____ (i) A single shared secret key (ii) Public and private key pair (iii) Only hashing (iv) Only VPNs	K2	CO4
5	9	Linux is an example of _____ (i) Operating System (ii) Compiler (iii) Database (iv) Web browser	K1	CO5
	10	Threads are _____ (i) Independent programs (ii) File system directories (iii) Shell commands (iv) Lightweight processes sharing memory within a process	K2	CO5

Cont...

SECTION - B (35 Marks)
 Answer ALL questions
 ALL questions carry EQUAL Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Define an operating system and explain its main functions.	K2	CO1
		(OR)		
	11.b.	Differentiate between mutex and monitors in process synchronization.		
2	12.a.	Compare paging and segmentation in terms of memory allocation.	K3	CO2
		(OR)		
	12.b.	Explain the concept of authentication and its types.		
3	13.a.	Discuss the differences between star, bus, ring, and mesh network topologies.	K4	CO3
		(OR)		
	13.b.	Differentiate between TCP and UDP in terms of reliability, speed, and connection.		
4	14.a.	Describe the purpose of DNS and SNMP in network communication.	K3	CO4
		(OR)		
	14.b.	Differentiate between symmetric and asymmetric encryption with examples.		
5	15.a.	Define Linux and explain its main features.	K5	CO5
		(OR)		
	15.b.	Discover the working concept of a shell script and write a simple script to display "Hello World".		

SECTION -C (30 Marks)
 Answer ANY THREE questions
 ALL questions carry EQUAL Marks

(3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Distinguish and explain First Come First Serve (FCFS) and Shortest Job First (SJF) scheduling algorithms.	K3	CO1
2	17	Assume the operation of file system structure and file allocation methods with suitable examples.	K2	CO2
3	18	Explain in detail the OSI model and TCP/IP model with a diagram, comparing each layer's functions.	K4	CO3
4	19	Analyze a network security scenario and recommend the use of firewalls, VPNs, and IDS/IPS to mitigate threats.	K5	CO4
5	20	Classify the process management in Linux, including process creation, scheduling, and termination.	K4	CO5

Z-Z-Z

END