

Instructions: Answer FIVE Questions only. Each carries 20 marks.

Question 1 (20 marks)

Answer **FOUR** parts only. Each carries 5 marks:

- i) Outline the structure of computer names used by DNS.
- ii) Describe the main features of the Post Office Protocol (POP)
- iii) What causes network congestion and outline 2 solutions for it.
- iv) Distinguish between Anonymous vs non-Anonymous FTP
- v) Describe how the Address Resolution Protocol (ARP) operates.

Question 2 (20 marks)

Answer all parts

- i) Describe the main features of the IP protocol. (3 marks)
- ii) Explain the five classes of IP address (5 marks)
- iii) There are five reserved IP addresses. What are these and what are they used for? (5 marks)
- iv) A company with a network address of 156.157.0.0 wants to segment the network into 18 different subnets? What subnet mask is needed and how many hosts per subnet could be supported? (2 marks)
- v) What subnet mask is needed for a class C network divided into 5 different subnets and how many hosts per subnet could be supported? (2 marks)
- vi) What subnet mask is needed for a class B network divided into 10 different subnets and how many hosts per subnet could be supported? (2 marks)
- vii) How many bits does IPv6 use for network addresses? (1 mark)

Question 3 (20 marks)

Answer all parts

- i) Outline four methods of attack on an e-commerce system. (4 marks)
- ii) Distinguish fully between Symmetric and Asymmetric Cryptosystems. (8 marks)
- iii) Explain what is meant by a digital signature and identify how it is used? (4 marks)
- iv) Explain what is meant by a message digest and identify how it is used? (4 marks)

Question 4 (20 marks)

Answer all parts

- i) What is a network's topology? (1 mark)
- ii) Distinguish between the following network topologies: (6 marks)
- iii) What is CSMA/CD and explain how it controls medium access and handles collisions. (6 marks)
- iv) Describe how token ring controls medium access and collisions (3 marks)
- v) List three reasons why LAN extension technologies required? (1 marks)
- vi) Briefly distinguish between repeaters, bridges and routers. (3 marks)

Question 5 (20 marks)
Answer all parts

- i) Outline the different types of Web documents and their relative advantages/disadvantages. (8 marks)
- ii) Describe the Common Gateway Interface and the two methods of sending user data to the server. (6 marks)
- iii) Outline the main features of Active Server Pages. (3 marks)
- iv) What are sockets? (3 marks)

Question 6 (20 marks)
Answer FOUR parts only. Each carries 5 marks:

- i) Describe the main features of Asymmetric Digital Subscriber Line (ADSL)
- ii) Write short notes on checksums?
- iii) Describe how name resolution is handled by DNS.
- iv) What is byte stuffing and why is it used?
- v) Briefly describe the following transmission media: radio, microwave & infrared

Question 7 (20 marks)
Answer all parts

- i) Describe the main features of TCP (5 marks)
- ii) Describe how TCP recovers from a lost packet (3 marks)
- iii) Outline how TCP correctly orders incoming data (3 marks)
- iv) Describe how TCP manages flow control. (3 marks)
- v) Outline the process of connection establishment and termination as employed by TCP. (3 marks)

vi) Outline the main features of UDP

(3 marks)