A-0851

Total Pages : 6 **Roll No. ----------**

BCA-14

Data Communication and Computer Networks

Bachelor of Computer Application (BCA)

5th Semester Examination 2024(Dec.)

Time: 2:00 hrs Max. Marks: 70

Note : This paper is of Seventy (70) marks divided into Two (02) Section A and B. Attempt the questions contained in these sections according to the detailed instructions given therein. Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

P.T.O.

Section-A (Long-Answer-Type Questions)

Note : Section 'A' contains Five (05) long-answer-type questions of Nineteen (19) marks each. Learners are required to answer any Two (02) questions only.

[2x19=38]

Q.1. Answer the following:

a. Explain the concept of a computer network. (3 marks)

b. Define computer networks and describe their goals, structure and functionality. (5 marks)

c. Discuss the different types of networks (LAN, MAN, WAN), their characteristics, and examples of their usage. (5 marks)

d. Compare and contrast server-based LANs and peer-to-peer LANs in terms of advantages and limitations. (6 marks)

Q.2. Answer the following:

a. Describe the OSI Reference Model. (4 marks)

b. Explain the functions of each of the seven layers in the OSI model, focusing on their role in data transmission. (6 marks)

c. Discuss the significance of the ISO-OSI model in networking and the different terminologies associated with it. (2 marks)

d. Compare the OSI model with the TCP/IP model, emphasizing the key differences and similarities in their layer architecture and services. (6 marks)

Q.3. Answer the following:

a. Explain the various types of transmission media used in computer networks. (4 marks)

b. Discuss guided media (wired) such as coaxial cable, twisted pair, and fiber optics, detailing their physical structure, applications, and differences in data transmission. (5 marks)

c. Explain the concept of unguided media (wireless) including radio waves, microwaves, and infrared, along with their propagation methods. (5 marks)

d. Compare the advantages and disadvantages of guided versus unguided transmission media. (5 marks)

P.T.O.

Q.4. Answer the following:

a. What are network connectivity devices? Explain their functions in detail.

b. Discuss the roles of passive and active hubs, repeaters, bridges, switches (2- layer and 3-layer), and routers in network communication.

c. Explain how each device helps in signal transmission, data routing, and network efficiency.

d. Describe the function of firewalls and proxy servers as network security devices, and how they protect data and prevent unauthorized access.

Q.5. Answer the following:

a. Describe the architecture of Bluetooth technology. (5 marks)

b. Explain the basic architecture of Bluetooth, including its layers and protocols. (5 marks)

c. Discuss the concepts of Piconet and Scatternet, their structure, and how they allow devices to communicate in a Bluetooth network. (4 marks)

d. Highlight the different applications of Bluetooth technology in personal area networks (PANs) and its use in modern wireless communication. (5 marks)

Section-B (Short-Answer-Type Questions)

Note : Section 'B' contains Eight (08) short-answer-type questions of Eight (08) marks each. Learners are required to answer any Four (04) questions only.

[4x8=32]

Q.1. a. Differentiate between Passive & active tube.

b. Differentiate between Repeaters & Bridges.

Q.2. What are Switches? Differentiate between 2-Layers switch, 3-Layer switch & Switch (Router) with example of each.

Q.3. What are different Ethernet frames? Differentiate between IEEE 802.3, IEEE 802.4 & IEEE 802.5.

P.T.O.

Q.4. Discuss the three propogation methods Ground, sky & Line-of-sight with example of each.

Q.5. Define transmission media in networking. What are guided transmission media? Discuss the characteristics of Coxial Cable.

Q.6. Discuss the physical structure of fibre Optics Cable. Explain the advantages & disadvantages of fibre Optics cable as a transmission media.

Q.7. Discuss in detail the TCP/IP Reference Model. Compare ISO-OSI and TCP/IP Model.

Q.8. Discuss the basic Architecture of Internet. Who is ISP? What is an IP Address?

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