BRAINWARE UNIVERSITY

Term End Examination 2023-2024
Programme – MCA-2022/MCA-2023
Course Name – Data Communication & Computer Networks
Course Code - MCA204
(Semester II)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Define the primary purpose of data communication.

a) Entertainment b) Information sharing
c) Power generation d) Transportation

(ii) Identify an example of a wired communication medium from the following options.

a) Bluetooth b) Fiber optic cable
c) Wi-Fi d) Infrared

(iii) What does the abbreviation LAN signify in networking?

a) Local Area Network b) Long Access Node
c) Logical Address Naming d) Linking Area Network

(iv) Which communication mode closely resembles a walkie-talkie, where users alternate between speaking and listening?

a) Simplex b) Half Simplex
c) Full Duplex d) Multiplex

(v) What is the purpose of a hub in a network?

a) Manages network security b) Connects different networks
c) Filters and controls network traffic d) Acts as a central connection point for devices in a network

(vi) Identify the fundamental difference between analog and digital data.

a) Continuous vs. discrete b) Fast vs. slow
c) Color vs. black and white d) Hard vs. soft

(vii) Identify the term that describes data that is continuous and can take any value within a range.

a) Digital
b) Analog
c) Binary
d) Hexadecimal

(viii) If a digital signal has a baud rate of 2400 and each signal represents 4 bits, Identify the data rate.

a) 600 bps
b) 2400 bps
c) 9600 bps
d) 4800 bps

(ix) In unguided transmission media, communication occurs through_____.

a) Cables
b) Air or vacuum
c) Fiber optics
d) Coaxial cables

(x) Choose from the following options an example of an error detection method.

a) Flow control
b) Parity checking
c) Framing
d) Bit stuffing

(xi) Select that DSL technology is associated with :-

a) Analog telephone lines
b) Fiber-optic cables
c) Microwave transmission
d) Satellite communication

(xii) Select the type of link implemnted by UDP.

a) Serial
b) Parallel
c) Process to Process
d) Host to Host

(xiii) What is the number of domains in User Datagram Protocol header?

a) Two
b) Three
c) Four
d) None of these

(xiv) Evaluate the number of total bits used in user datagram protocol.

a) 12
b) 22
c) 32
d) 42

(xv) Select the protocol that do not have acknowledgment segment.

a) UDP
b) TCP
c) IP
d) None of these

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Explain the difference between Static and Dynamic IP Address. (3)
3. Illustrate the concept of AM,FM and PM. (3)
4. Explain the Lost Frame and the Damaged Frame in computer networks. (3)
5. Analyse the function and significance of the SequenceNum field in a TCP segment. (3)
6. Classify the class ranges in IP Addressing. (3)

OR

Categorize the following address : i) 159.78.9.10 ii) 192.158.1.38 in IP class with proper justification. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Describe the difference the OSI and TCP/IP reference models in terms of their layer structures. (5)
8. Distinguish the types of errors that can occur in data transmission and explain how they are detected. (5)
9. Illustrate the role of congestion control in network communication and explain how TCP manages congestion. (5)

10. Explain the concept of Quality of Service (QoS) in network communication and discuss its importance in modern networking environments. (5)
11. Explain the concept of public-key cryptography. (5)
12. Explain the operation process of the Leaky Bucket algorithm for QoS improving technique and discuss its application in network traffic management. (5)

OR

Explain how the Selective Repeat mechanism in TCP enhances reliability compared to the Go-Back-N approach. (5)

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