

U.G. 4th Semester Examination - 2021**COMPUTER SCIENCE****[HONOURS]****Course Code : COM.SC-H-CC-L-409****(Computer Networks)**

Full Marks : 30

Time : $1\frac{1}{2}$ Hours*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.***GROUP-A**

1. Answer any **five** questions : 2×5=10
- a) What is the necessity of OSI network model?
 - b) What are the functionalities of Application layer of OSI network model?
 - c) What are the main differences between computer network and distributed systems?
 - d) What are components involved in data communication between two devices?
 - e) Explain star topology.
 - f) What is the difference between packets and segments?

[Turn over]

- g) Briefly explain multiplexing in circuit switching.
- h) What is the working of DNS?

GROUP-BAnswer any **two** questions:

5×2=10

- 2. Explain the client-server network application architecture. How it is different from P2P network application architecture? 4+1
- 3. Explain the differences between circuit switching and packet switching. What is virtual circuit switching? 3+2
- 4. Differentiate between connectionless and connection-oriented data communication. Which transport layer protocols are used for connectionless and connection-oriented communication? 3+2
- 5. What is a routing table? How routing table is updated in static routing and dynamic routing? 1+4
- 6. What are the functionalities provided by transport layer of OSI network model? 5

GROUP-C

Answer any **one** question: $10 \times 1 = 10$

7. a) Calculate the checksum for the binary message sequence:

10001000111011011001010110100101

- b) A bit stream 11001110101 is to be transmitted using the standard CRC method. The generator polynomial is $x^4 + x^2 + 1$. What is the actual bit string transmitted? $4 + 6$

8. a) Identify the Class, Network IP Address, Direct broadcast address and Limited broadcast address of IP Address: 150.0.150.150.

- b) How many bits are allocated for Network ID and Host ID in 23.192.157.234 address?

- c) How many networks can be created using Class C IP address? $5 + 3 + 2$

9. Write short notes on any **two** of the following:

$5 \times 2 = 10$

- a) DNS Servers hierarchy
 - b) CSMA/CD
 - c) Sliding Window Protocol
 - d) FDM and TDM
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