

Question Paper

Exam Date & Time: 18-Apr-2018 (09:30 AM - 12:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES

FOURTH SEMESTER B.S (ENGG)

END-SEMESTER THEORY EXAMINATIONS APRIL - 2018

DATE : 18 APRIL 2018

TIME : 9:30AM TO 12:30PM

Computer Networks [CS 249]

Marks: 100

Duration: 180 mins.

Answer 5 out of 8 questions.

- 1) Define the term computer network. What is meant by a switched network? With the help of diagrams explain circuit- switched network and packet-switched network. (10)
 - A)
 - B) With the help of respective diagrams explain the following concepts. [5+5M]
 - i) Encapsulation / Decapsulation.
 - ii) Multiplexing and demultiplexing.
- 2) With the help of diagram briefly explain the seven layers of OSI Model. Write the function of each layer. (10)
 - A)
 - B) With the help of diagrams briefly explain the following. [5+5M]
 - i) Example of a client-server paradigm.
 - ii) Example of a peer-to-peer paradigm.
- 3) Briefly explain the following transport layer general service bidirectional protocol and addressing. (10)
 - A)
 - i) Piggybacking.
 - ii) Socket addressing with diagram. [6+4M]
 - B) With the help of respective diagrams explain the following transport layer protocols.[5+5M]
 - i)The Go-Back-N protocol.
 - ii) Selective-Repeat protocol.
- 4) Briefly explain the User Datagram Protocol (UDP). Write details of User datagram protocol and packet format. (10)
 - A)
 - B) The following is the contents of a UDP header in (10)

hexadecimal format. Answer the following showing the conversion steps and calculations clearly. [3+3+3+1M]

CB84000D001C001C

- a. What is the source port number?
- b. What is the destination port number?
- c. What is the total length of the user datagram?
- d. What is the length of the data?

- 5) In a network with fixed value for $m > 1$, we can either use (10)
- A) Go-Back N or Selective Repeat protocol. Describe the advantage and disadvantage of using each. What other network criteria should be considered to select each of the protocols?
- B) Briefly explain the following network layer services. (10)
[2+2+2+2+2M]
i) Packetizing
ii) Routing
iii) Forwarding
iv) Error Control
v) Congestion control
- 6) Diagrammatically show the network layer in IPv4 and network layer in IPv6. Briefly write the use of IGMP, ICMP, ARP and ICMPv6 protocols. (10)
- A)
- B) Write any five differences between network layer IPv4 and network layer IPv6. (5)
- C) Write the Pseudocode of distance vector network routing algorithm. (5)
- 7) Briefly explain the pure aloha and slotted aloha. Give vulnerable time of pure aloha and slotted aloha. (10)
- A)
- B) What is CRC? Explain its working. If data to be transmitted is 100100 and predetermined divisor is 1101 show the steps to be followed to generate the transmission frame. (10)
- 8) Briefly explain the following: [3+3+3M] (9)
- A) (i) Channelization. Mention any two channelization protocols
(ii) Cellular telephony and write diagram of cellular system.
(iii) Satellite networks and mention any two systems.
- B) What is Worldwide Interoperability for Microwave Access? (6)
What is Mobile IP?
- C) Briefly explain analog to digital converter. Write diagram for pulse code modulation. (5)

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