



## ISO/OSI Layers

[A] TCP, but not UDP

[B] TCP and UDP

[C] UDP, but not TCP

[D] Neither TCP, nor UDP

9) One of the header fields in an IP datagram is the Time to Live (TTL) field. Which of the following statements best explains the need for this field?

1 Marks GATE-CSE/IT-2010()

[A] It can be used to prioritize packets

[B] It can be used to reduce delays

[C] It can be used to optimize throughput

[D] It can be used to prevent packet looping

10) Suppose computers A and B have IP addresses 10.105.1.113 and 10.105.1.91 respectively and they both use the same net mask N. Which of the values of N given below should not be used if A and B should belong to the same network?

2 Marks GATE-CSE/IT-2010()

[A] 255.255.255.0

[B] 255.255.255.128

[C] 255.255.255.192

[D] 255.255.255.224

11) In serial data transmission, every byte of data is padded with a '0' in the beginning and one or two '1's at the end of byte because

1 Marks GATE-CSE/IT-2002()

[A] Receiver is to be synchronized for byte reception

[B] Receiver recovers lost '0's and '1's from these padded bits

[C] Padded bits are useful in parity computation

[D] None of the above

12) A CPU has two modes—privileged and non-privileged. In order to change the mode from privileged to non-privileged

1 Marks GATE-CSE/IT-2001()

[A] a hardware interrupt is needed

[B] a software interrupt is needed

[C] a privileged instruction (which does not generate an interrupt) is needed

[D] a non-privileged instruction (which does not generate an interrupt) is needed

## ISO/OSI Layers

### Key Paper

1.	D	2.	A	3.	B	4.	B	5.	A
6.	B	7.	C	8.	B	9.	D	10.	D
11.	A	12.	B						



## Network Topologies

### Key Paper

1. D
2. B
3. C
4. C
5. B

## Network Protocols

1) Which of the following assertions is FALSE about the Internet Protocol (IP)?

1 Marks GATE-CSE/IT-2003( )

- [A] It is possible for a computer to have multiple IP addresses
- [B] IP packets from the same source to the same destination can take different routes in the network.
- [C] IP ensures that a packet is forwarded if it is unable to reach its destination within a given number of hops.
- [D] The packet source cannot set the route of an outgoing packets; the route is determined only by the routing tables in the routers on the way.

2) The subnet mask for a particular network is 225.255.31.0. Which of the following pairs of IP addresses could belong to this network?

2 Marks GATE-CSE/IT-2003( )

- [A] 172.57.88.62 and 172.56.87.23.2
- [B] 10.35.28.2 and 10.35.29.4
- [C] 191.203.31.87 and 191.234.31.88
- [D] 128.8.129.43 and 128.8.161.55

3) A 2 km long broadcast LAN has 107 bps bandwidth and uses CSMA/CD. The signal travels along the wire at  $2 \times 10^8$  m/s. What is the minimum packet size that can be used on this network?

2 Marks GATE-CSE/IT-2003( )

- [A] 50 bytes
- [B] 100 bytes
- [C] 200 bytes
- [D] None of the above

4) A and B are the only two stations on an Ethernet. Each has a steady queue of frames to send. Both, A and B attempt to transmit a frame, collide, and a wins the first back off race. At the end of this successful transmission by A, both, A and B attempt to transmit and collide. The probability that A wins the second back off race is

1 Marks GATE-CSE/IT-2004( )

- [A] 0.5
- [B] 0.625
- [C] 0.75
- [D] 1.0

5) The routing table of a router is shown below:

Destination	Subnet Mask	Interface
128.75.43.0	255.255.255.0	Eth0
128.75.43.0	255.255.255.128	Eth1
192.12.17.5	255.255.255.255	Eth3
default		Eth2

On which interfaces will the router forward packets addressed to destinations 128.75.43.16 and 192.12.17.10 respectively?

1 Marks GATE-CSE/IT-2004( )

- [A] Eth1 and Eth2
- [B] Eth0 and Eth2
- [C] Eth0 and Eth3
- [D] Eth1 and Eth3

6) Suppose the round trip propagation delay for a 10 Mbps Ethernet having 48-bit jamming signal is  $46.4 \mu\text{s}$ . The minimum frame size is:

2 Marks GATE-CSE/IT-2005( )

- [A] 94
- [B] 416
- [C] 464
- [D] 512

7) For which one of the following reasons does Internet Protocol (IP) use the time-to-live (TTL) field in the IP diagram header?

2 Marks GATE-CSE/IT-2005( )

- [A] Ensure packets reach destination within that time
- [B] Discard packets that reach later than that time
- [C] Prevent packets from looping indefinitely
- [D] Limit the time for which a packet gets queued in intermediate routers

8) The address of a class B host is to be split into subnets with a 6-bit subnet number. What is the maximum number of subnets and the maximum number of hosts in each subnet?

## Network Protocols

2 Marks GATE-CSE/IT-2007()

[A] 62 subnets and 262142 hosts

[B] 64 subnets and 262142 hosts

[C] 62 subnets and 1022 hosts

[D] 64 subnets and 1024 hosts

9) What is the maximum size of data that the application layer can pass on to the TCP layer below

[A] Any size

[B]  $2^{16}$  bytes – size of TCP header 1 Marks GATE-CSE/IT-2008()

[C]  $2^{16}$  bytes

[D] 1500 bytes

10) If a class B network on the Internet has a subnet mask of 255.255.248.0, what is the maximum number of hosts per subnet?

1 Marks GATE-CSE/IT-2008()

[A] 1022

[B] 1023

[C] 2046

[D] 2047

11) A client process P needs to make a TCP connection to a server process S. Consider the following situation: the server process S executes a socket(), a bind() and a listen() system call in that order, following which it is preempted. Subsequently, the client process P executes a socket() system call followed by connect() system call to connect to the server process S. The server process has not executed any accept() system call. Which one of the following events could take place?

1 Marks GATE-CSE/IT-2008()

[A] Connect() system call returns successfully

[B] Connect() system call blocks

[C] Connect() system call returns an error.

[D] Connect() system call results in a core dump

## Network Protocols

### Key Paper

1.	D	2.	D	3.	C	4.	B	5.	A
6.	D	7.	B	8.	C	9.	B	10.	C
11.	C								





## Routing Algorithms

### Key Paper

1. B
2. C
3. D

## Congestion control

1) The maximum window size for data transmission using the selective reject protocol with  $n$ -bit frame sequence numbers is

[A]  $2^n$

[B]  $2^{n-1}$

1 Marks GATE-CSE/IT-2005( )

[C]  $2^n - 1$

[D]  $2^{n-2}$

2) Station A needs to send a message consisting of 9 packets to station B using a sliding window (window size 3) and go-back- $n$  error control strategy. All packets are ready and immediately available for transmission. If every 5th packet that A transmits gets lost (but no acks from B ever get lost), then what is the number of packets that A will transmit for sending the message to B?

[A] 12

[B] 14

2 Marks GATE-CSE/IT-2006( )

[C] 16

[D] 18

3) In the slow start phase of the TCP congestion control algorithm, the size of the congestion window

[A] Does not increase

[B] Increases linearly

1 Marks GATE-CSE/IT-2007( )

[C] Increases quadratically

[D] Increases exponentially

## Congestion control

### Key Paper

1. B
2. C
3. D

cryptography, digital signature

1) The message 11001001 is to be transmitted using the CRC polynomial  $x^3 + 1$  to protect it from errors. The message that should be transmitted is:

2 Marks GATE-CSE/IT-2007()

[A] 11001001000

[B] 11001001011

[C] 11001010

[D] 110010010011

cryptography, digital signature

**Key Paper**

1. **B**

