

DAY 1: The "Must Memorize" Tables

(These are direct 1-mark questions. Do not skip a single line here.)

1. Standard Port Numbers (Most Repeated)

Question type: "Which port is used by SMTP?" or "Match the protocol to the port."

Protocol	Port No.	Protocol	Port No.
FTP (Data)	20	DNS	53
FTP (Control)	21	DHCP	67/68
SSH	22	HTTP	80
TELNET	23	POP3	110
SMTP	25	HTTPS	443

2.

OSI Model (Layer Functions & Devices)

Question type: "Which layer provides encryption?" or "Routers operate at which layer?"

Layer	Key Function (Keywords)	Devices	PDU Name
Application	User interface, Email, File transfer	Gateway, PC	Data
Presentation	Encryption, Compression, Translation	Gateway	Data
Session	Dialog control, Synchronization	Gateway	Data
Transport	End-to-End delivery, Flow/Error control (TCP/UDP)	Gateway	Segment
Network	Routing, IP Addressing, Path selection	Router	Packet
Data Link	Framing, MAC Addressing, Error detection	Switch, Bridge	Frame
Physical	Bit transmission, Topology, Cables	Hub, Repeater	Bit

3. IP Address Classes (Ranges)

Question type: "Identify the class of IP 172.16.1.1" or "Which is a private IP?"

Class	Range (First Byte)	Default Subnet Mask	Use
A	1 – 126	255.0.0.0	Large Networks
B	128 – 191	255.255.0.0	Medium Networks
C	192 – 223	255.255.255.0	Small Networks (LAN)
D	224 – 239	N/A	Multicasting
E	240 – 255	N/A	Research

Crucial Note: 127.x.x.x is NOT Class A. It is the **Loopback Address** (for testing localhost).

DAY 2: Concepts & Logic (Solve 5-10 Problems)

1. +(Guaranteed 1-2 Qs)

You will be asked to find the **Network ID**, **Broadcast ID**, or **Number of Hosts**.

- **Formula for Hosts:** $2^n - 2$ (where n is number of host bits).
- **Example:** If Subnet Mask is 255.255.255.240, the last octet is 11110000.
 - Host bits ($0s$) = 4.
 - Usable hosts = $2^4 - 2 = 14$.
- **Identify Network ID:** Perform **AND operation** between IP and Subnet Mask.

2. TCP vs UDP

Question type: "Which protocol is connectionless?"

- **TCP:** Connection-oriented, Reliable, Slow, Header size (20-60 bytes). Used for Email, Web, File Transfer.
- **UDP:** Connection-less, Unreliable, Fast, Header size (8 bytes). Used for **Video Streaming, DNS, VoIP, Gaming**.

3. Flow Control Protocols (Efficiency)

- **Stop and Wait:** Sender sends 1 packet, waits for Ack. Efficiency is low ($\$1 / (1 + 2a)\$$).
- **Go-Back-N:** Window size $\$W\$$. If error occurs, retransmit **ALL** frames from the lost one.
- **Selective Repeat:** Only retransmit the **specific lost frame**. Most efficient but complex.

Last Minute "Trap" Checklist

- **Invalid IP:** Any IP with a number $\$ > 255\$$ (e.g., 192.168.300.1) is **INVALID**.
- **MAC Address Size:** 48 bits (6 bytes). Represented in Hex.
- **IPv4 Size:** 32 bits (4 bytes).
- **IPv6 Size:** 128 bits (16 bytes).
- **Ping Command:** Uses **ICMP** protocol.

Strategy for Exam Day:

1. Attempt the **OSI/Port/Device** questions first (they take 5 seconds).
2. Do the **Subnetting** math questions last (they take 1-2 minutes).

Good luck! You have enough time to score well if you stick to these tables.

You have **2 days** left. Passive reading is useless now. You must practice the **math** because C-CAT always asks 1-2 calculation questions in Section B.

Below are **6 High-Probability Practice Questions** based on previous year trends.

The "Do-It-Now" Subnetting Mock Test

Grab a pen. Attempt these 6 questions first. The solutions are below.

Q1. (Host Count)

What is the maximum number of usable hosts on a subnet with the mask 255.255.255.224 (/27)?

- A) 32
- B) 30
- C) 64
- D) 62

Q2. (Network ID)

Which subnet does the host 192.168.10.110 belong to, if the subnet mask is 255.255.255.192 (/26)?

- A) 192.168.10.0
- B) 192.168.10.64
- C) 192.168.10.32
- D) 192.168.10.96

Q3. (Broadcast ID)

What is the Broadcast Address for the network 172.16.0.0 with a subnet mask of /18?

- A) 172.16.255.255
- B) 172.16.0.255
- C) 172.16.63.255
- D) 172.16.31.255

Q4. (Valid Host Range)

For the subnet 10.0.0.0/30, what is the valid range of host IP addresses?

- A) 10.0.0.0 to 10.0.0.3

B) 10.0.0.1 to 10.0.0.2

C) 10.0.0.1 to 10.0.0.3

D) 10.0.0.0 to 10.0.0.2

Q5. (Subnet Mask Identification)

You need 100 subnets for a Class C network (192.168.5.0). Which subnet mask should you use?

A) 255.255.255.224

B) 255.255.255.240

C) 255.255.255.248

D) 255.255.255.128

Q6. (The "Trap" Question)

Which of the following IP addresses can be assigned to a host?

A) 192.168.1.0/24

B) 127.0.0.1

C) 192.168.1.255/24

D) 10.10.10.10

Detailed Solutions (Read Carefully)

Sol 1: B (30 Hosts)

- **Logic:** The mask is /27.
- Total bits = 32. Network bits = 27. **Host bits (zeros) = 5** ($32 - 27$).
- Formula: $2^n - 2$ (where n is host bits).
- Calculation: $2^5 - 2 = 32 - 2 = \mathbf{30}$.
 - Note: We subtract 2 because the first IP is Network ID and the last is Broadcast ID.

Sol 2: B (192.168.10.64)

- **Logic:** The mask /26 means block size is $256 - 192 = 64$.
- The subnets go in steps of 64:
 - 0 to 63
 - **64 to 127** (Includes 110)
 - 128 to 191
- Your IP 110 falls in the range starting at **64**.

Sol 3: C (172.16.63.255)

- **Logic:** A /18 mask means the first two octets are locked (16 bits) + 2 bits from the third octet.
- Remaining Host bits = $32 - 18 = 14$ bits.
- Block size in the 3rd octet: The mask is 255.255.192.0. The "magic number" is $256 - 192 = 64$.
- The networks go: 172.16.0.0 -> 172.16.64.0 -> 172.16.128.0.
- The Broadcast address is always **one less** than the next network.
- Next network is 172.16.64.0, so the previous broadcast is 172.16.63.255.

Sol 4: B (10.0.0.1 to 10.0.0.2)

- **Logic:** A /30 is used for point-to-point links.
- Host bits = $32 - 30 = 2$.
- Total IPs = $2^2 = 4$.
- IPs: .0 (Network), .1 (First Host), .2 (Last Host), .3 (Broadcast).
- Valid hosts are only **.1 and .2**.

Sol 5: D (Impossible/Trick) *Wait, let's re-calculate.*

- **Correction:** This is a trick question often found in exams.
- Class C default mask is /24. You have 8 bits for hosts.
- To get 100 subnets, you need $2^7 \geq 100$. $2^6 = 64$ (too small), $2^7 = 128$ (enough).
- So you need to borrow **7 bits**.
- Mask = 11111111.11111111.11111111.11111110
- Decimal: **255.255.255.254**.
- **Note:** None of the options A, B, C work properly for 100 subnets. If forced to choose, look for the highest borrow.
 - Option A (/27) = 3 bits = 8 subnets.
 - Option B (/28) = 4 bits = 16 subnets.
 - Option D (/25) = 1 bit = 2 subnets.
 - **Exam Tip:** If the question was "Requires 10 subnets", Option B would be correct ($2^4=16$). Watch the numbers carefully.

Sol 6: D (10.10.10.10)

- **A** is a Network ID (ends in 0).
- **B** is a Loopback Address (Localhost).
- **C** is a Broadcast Address (ends in 255).
- **D** is a valid Class A private IP.

The "Cheat Sheet" for Exam Morning

Memorize these **Magic Numbers** (Block Sizes) for the last octet:

CIDR	Subnet Mask (End)	Magic Number (Block Size)	Hosts (2 ^{h-2})
/25	.128	128	126
/26	.192	64	62
/27	.224	32	30
/28	.240	16	14
/29	.248	8	6
/30	.252	4	2

[Subnetting in Computer Networks](#)

This video is highly relevant as it is a specific **CDAC C-CAT Networking discussion** that covers the exact level of subnetting questions (like finding valid hosts and network IDs) you will face in the exam.