ACN

Quiz 1 didnt happen for us.
Quiz 2 was mostly based on Research Papers.
Mid sem questions were based on mininet commands, ip addressing, csma-cd, error detection in DLL.
End sem covered all the slides.

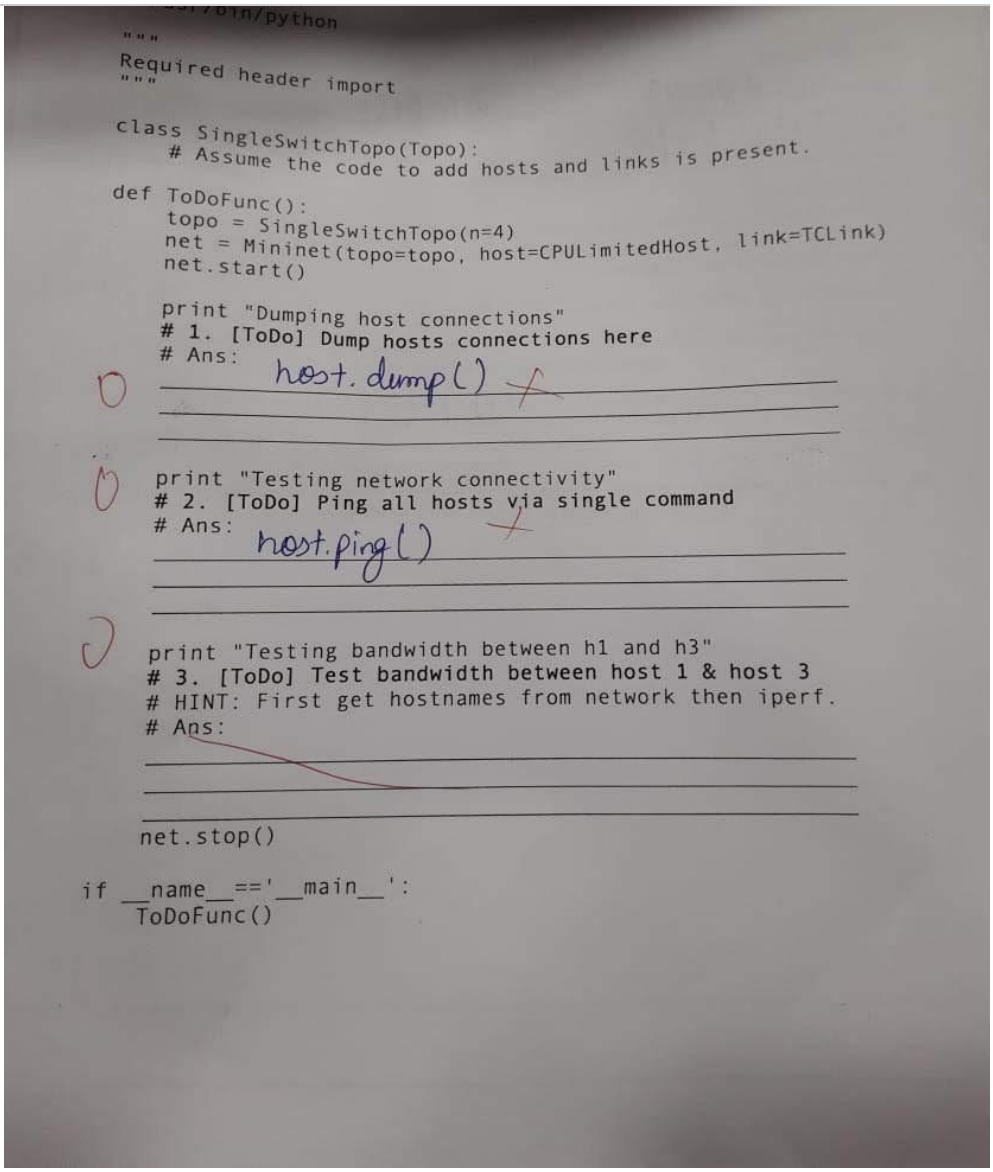
For SDN, these 3 videos will be really helpful
Lecture 43 : Software Defined Networking - I (Basics)
Lecture 44 : Software Defined Networking - II (Open Flow)
Lecture 45 : Software Defined Networking - III (Demo)

For P2P Bit torrent paper, these 2 videos were helpful
P2P Bittorrent Part--1
P2P Bittorrent Part--2

It is important to focus on **slides**, as fill-in-the-blank type questions can come directly same as SNS.

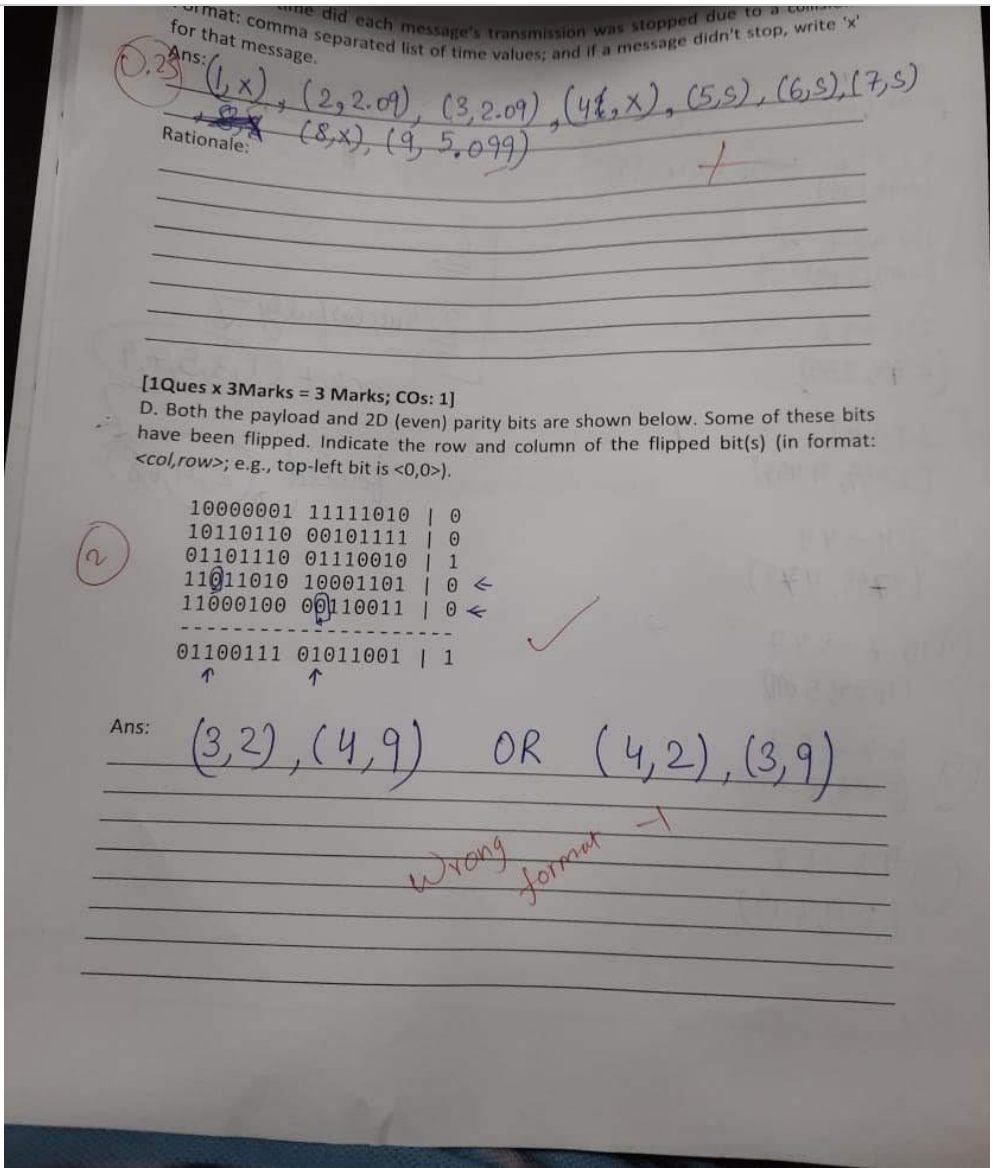
Mid sem Questions:

ACN



```
#!/usr/bin/python
"""
Required header import
"""

class SingleSwitchTopo(Topo):
    # Assume the code to add hosts and links is present.

def ToDoFunc():
    topo = SingleSwitchTopo(n=4)
    net = Mininet(topo=topo, host=CPULimitedHost, link=TCLink)
    net.start()

    print "Dumping host connections"
    # 1. [ToDo] Dump hosts connections here
    # Ans: host.dump()

    print "Testing network connectivity"
    # 2. [ToDo] Ping all hosts via single command
    # Ans: host.ping()

    print "Testing bandwidth between h1 and h3"
    # 3. [ToDo] Test bandwidth between host 1 & host 3
    # HINT: First get hostnames from network then iperf.
    # Ans:

    net.stop()

if __name__=='__main__':
    ToDoFunc()
```

ACN



...mat: comma separated list of time values; and if a message didn't stop, write 'x' for that message.

Ans: (1, x), (2, 2.09), (3, 2.09), (4, x), (5, 5), (6, 5), (7, 5) (8, x), (9, 5.099)

Rationale:

[1Ques x 3Marks = 3 Marks; COs: 1]

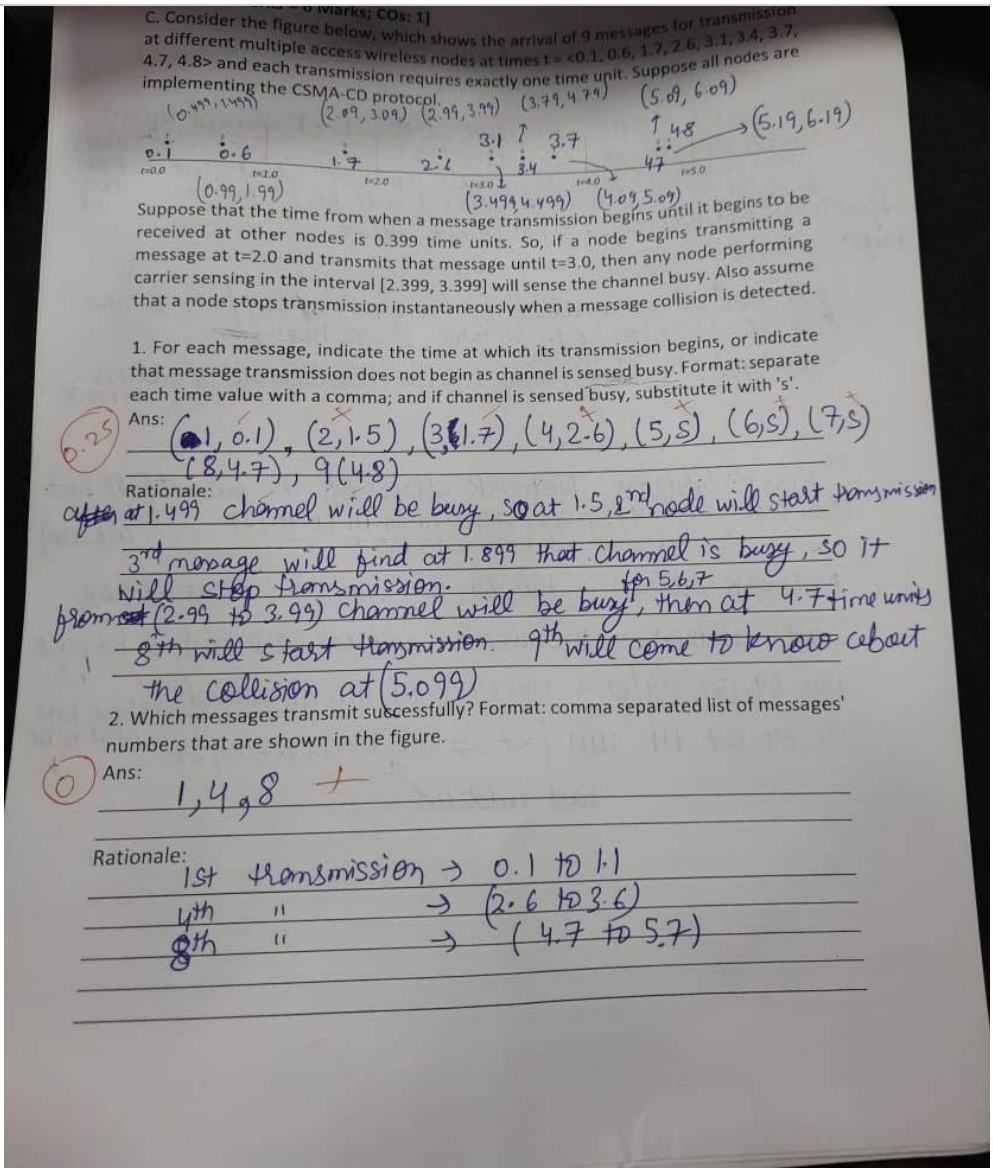
D. Both the payload and 2D (even) parity bits are shown below. Some of these bits have been flipped. Indicate the row and column of the flipped bit(s) (in format: *<col,row>*; e.g., top-left bit is <0,0>).

```
10000001 11111010 | 0
10110110 00101111 | 0
01101110 01110010 | 1
11011010 10001101 | 0 <
11000100 00110011 | 0 <
-------------------
01100111 01011001 | 1
  ↑        ↑
```

Ans: (3,2), (4,9) OR (4,2), (3,9)

Wrong format -1

ACN



C. Consider the figure below, which shows the arrival of 9 messages for transmission at different multiple access wireless nodes at times t = <0.1, 0.6, 1.7, 2.6, 3.1, 3.4, 3.7, 4.7, 4.8> and each transmission requires exactly one time unit. Suppose all nodes are implementing the CSMA-CD protocol.

(0.099, 1.099) (2.09, 3.09) (2.99, 3.99) (3.79, 4.79) (5.09, 6.09)

0.1 0.6 1.7 2.6 3.1 3.4 3.7 4.8 (5.19, 6.19)

t=0.0 t=1.0 t=2.0 t=3.0 t=4.0 t=5.0

(0.99, 1.99) (3.499, 4.499) (4.09, 5.09)

Suppose that the time from when a message transmission begins until it begins to be received at other nodes is 0.399 time units. So, if a node begins transmitting a message at t=2.0 and transmits that message until t=3.0, then any node performing carrier sensing in the interval [2.399, 3.399] will sense the channel busy. Also assume that a node stops transmission instantaneously when a message collision is detected.

1. For each message, indicate the time at which its transmission begins, or indicate that message transmission does not begin as channel is sensed busy. Format: separate each time value with a comma; and if channel is sensed busy, substitute it with 's'.

Ans: (1, 0.1), (2, 1.5), (3, 1.7), (4, 2.6), (5, s), (6, s), (7, s) (8, 4.7), 9(4.8)

0.25

Rationale:

after at 1.499 channel will be busy, so at 1.5, 2nd node will start transmission

3rd message will find at 1.899 that channel is busy, so it will stop transmission.

from (2.99 to 3.99) channel will be busy for 5,6,7, then at 4.7 time units 8th will start transmission. 9th will come to know about the collision at (5.099)

2. Which messages transmit successfully? Format: comma separated list of messages' numbers that are shown in the figure.

Ans: 1, 4, 8 +

0

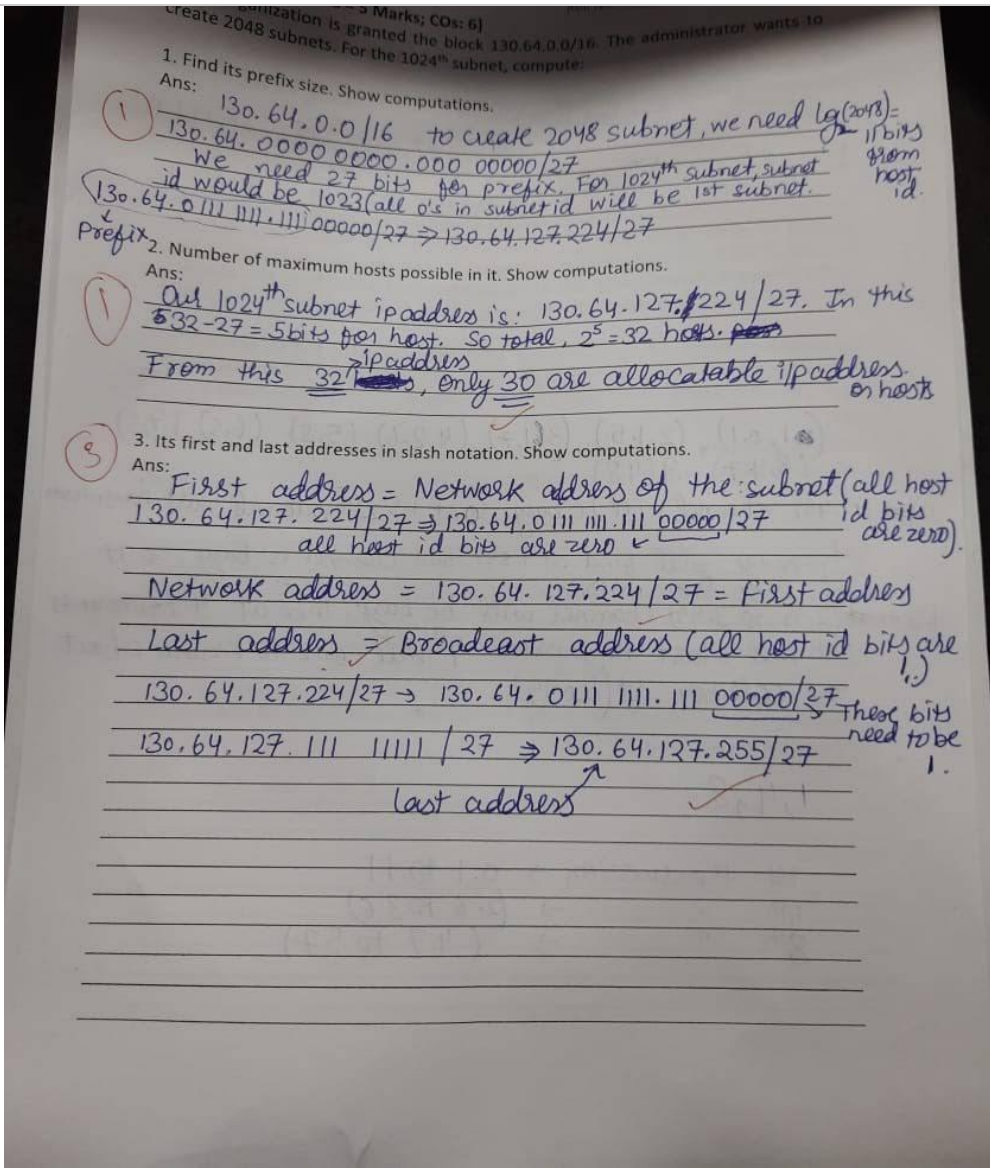
Rationale:

1st transmission → 0.1 to 1.1

4th " → (2.6 to 3.6)

8th " → (4.7 to 5.7)

ACN



Some of the questions asked with senior batch:

ACN

What is the broadcast address of the network 172.28.64.0 with mask 255.255.240.0?

- 172.28.77.255
- 172.28.78.255
- 172.28.79.255
- 172.28.80.255

13 Multiple Choice - Single Answer ✔ 1.0 Hide Answer

Which address could be the beginning address of a block of 32 classless addresses?

- 2.4.6.5
- 2.4.6.16
- 2.4.6.64

ACN

ACN

A simple parity-check code can detect _____ errors.

- An even-number of
- Two
- No (i.e., zero)
- An odd-number of
- Single

2 Multiple Choice - Single Answer ✔ 1.0 Hide Answer

What is the first address of a block of classless addresses if one of the addresses is 12.2.2.127/28?

- 12.2.2.0
- 12.2.2.96

ACN

ACN

Cho ice - Sin gle Ans wer

An organization is granted the block 130.56.0.0/16. The administrator wants to create 1024 subnets. Find the first and last addresses in subnet 3.

- 130.56.0.129/26 and 130.56.0.190/26
- 130.56.0.128/26 and 130.56.0.190/26
- 130.56.0.128/26 and 130.56.0.191/26
- 130.56.0.129/26 and 130.56.0.191/26

5 Mul tiple Cho ice - ✖ 0.0 Hide Answer

ACN

ACN

In _____ each station sends a frame whenever it has a frame to send.

- Pure ALOHA
- Slotted ALOHA
- Both pure ALOHA and slotted ALOHA
- Neither pure ALOHA nor slotted ALOHA

11 Multiple Choice - Single Answer ✖ 0.0 Hide Answer

An IPv6 address can have up to _____ hexadecimal digits.

- 16
- 32
- 8

ACN

ACN

A *Flow Table* has the following three sections?

- Rule/Action/Stats
- Flow/Action/Stats
- Rule/Instruction/Stats
- Entry/Action/Stats

6 Multiple Choice - Single Answer ✔ 1.0 Hide Answer

The checksum of 0000 and 0000 is _____.

- 1111
- 0000
- 1110
- 0111

ACN

3 Multiple Choice - Single Answer ✔ 1.0 Hide Answer

An organization is granted a block; one address is 2.2.2.64/20. The organization needs 10 subnets. What is the subnet prefix length?

- /20
- /24
- /25
- None of these

4 Multiple Choice - ✔ 1.0 Hide Answer

ACN

ACN

CODETANTRA

7 Multiple Choice - Single Answer ✖ 0.0 Hide Answer

In _____, a station monitors the medium after it sends a frame to see if the transmission was successful. If so, the station is finished. If, however, there is a collision, the frame is sent again.

- CSMA/CA
- CSMA/CD
- Either CSMA/CA or CSMA/CD
- Both CSMA/CA and CSMA/CD

8 Multiple ✔ 1.0 Hide Answer

ACN

ACN

The Traditional router can be partitioned into?

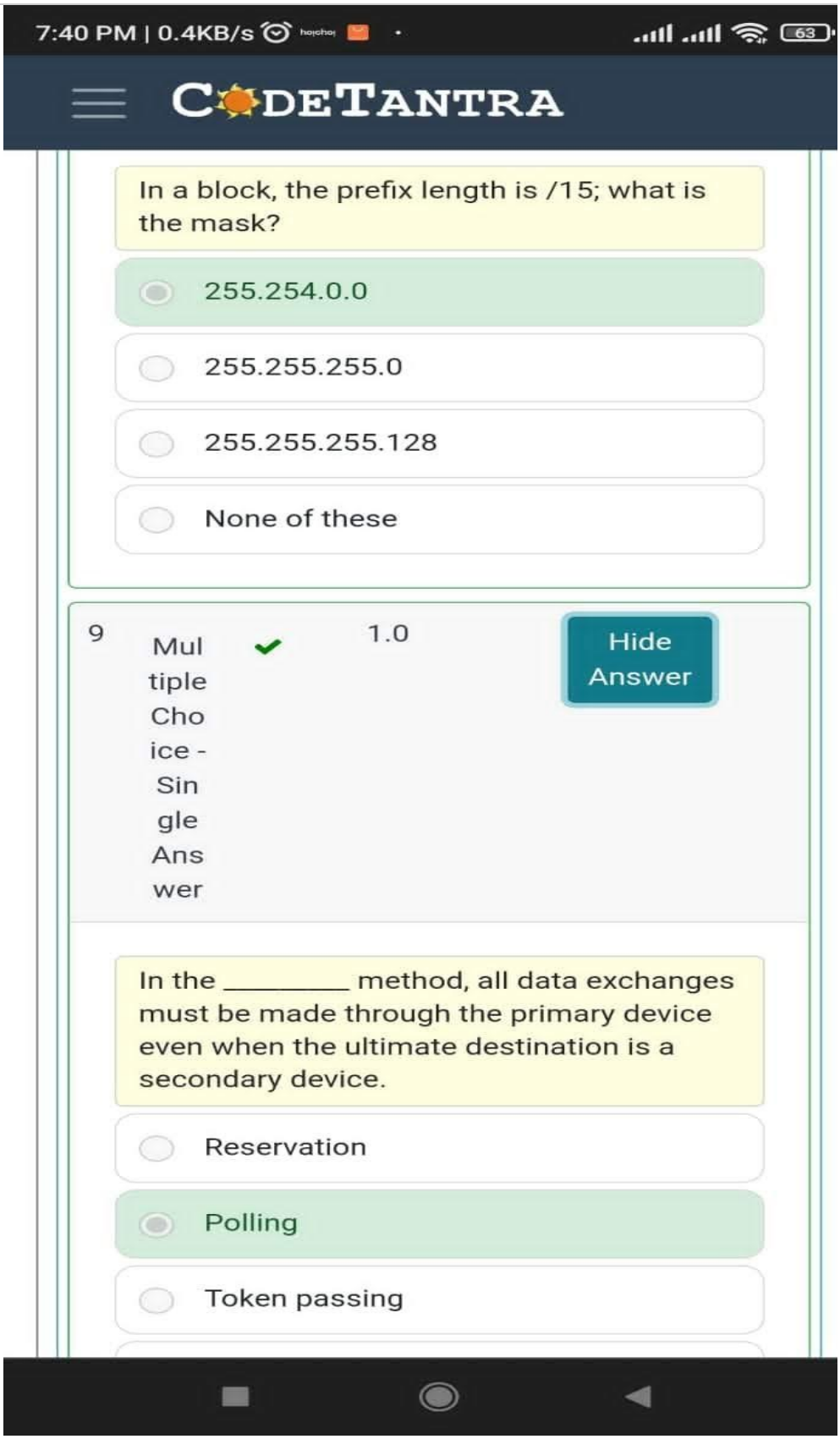
- Management plane / Decision plane / Data plane
- Management plane / Control plane / Forwarding plane
- Management plane / Control plane / Data plane
- None of these

15 Multiple Choice - Single Answer ✔ 1.0 Hide Answer

An IPv6 address can have up to _____ colons.

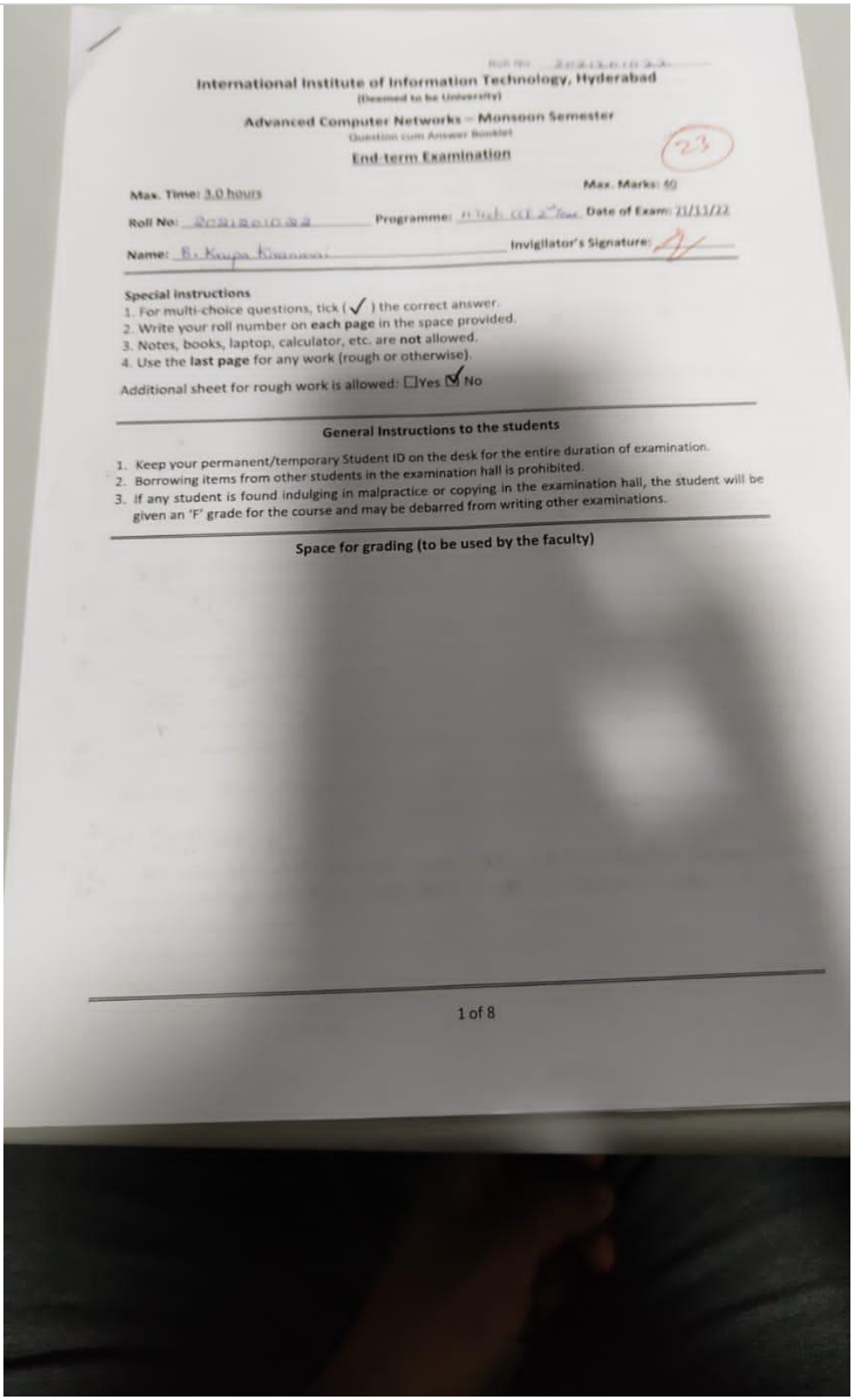
- 8

ACN



End Sem Questions(paper is of my friend**):**

ACN



International Institute of Information Technology, Hyderabad
(Deemed to be University)

Advanced Computer Networks – Monsoon Semester
Question cum Answer Booklet

End-term Examination

Max. Time: 3.0 hours Max. Marks: 60

Roll No: [illegible] Programme: [illegible] Date of Exam: 21/11/22

Name: [illegible] Invigilator's Signature:

Special instructions
1. For multi-choice questions, tick (✓) the correct answer.
2. Write your roll number on **each page** in the space provided.
3. Notes, books, laptop, calculator, etc. are **not** allowed.
4. Use the **last page** for any work (rough or otherwise).

Additional sheet for rough work is allowed: ☐Yes ☑No

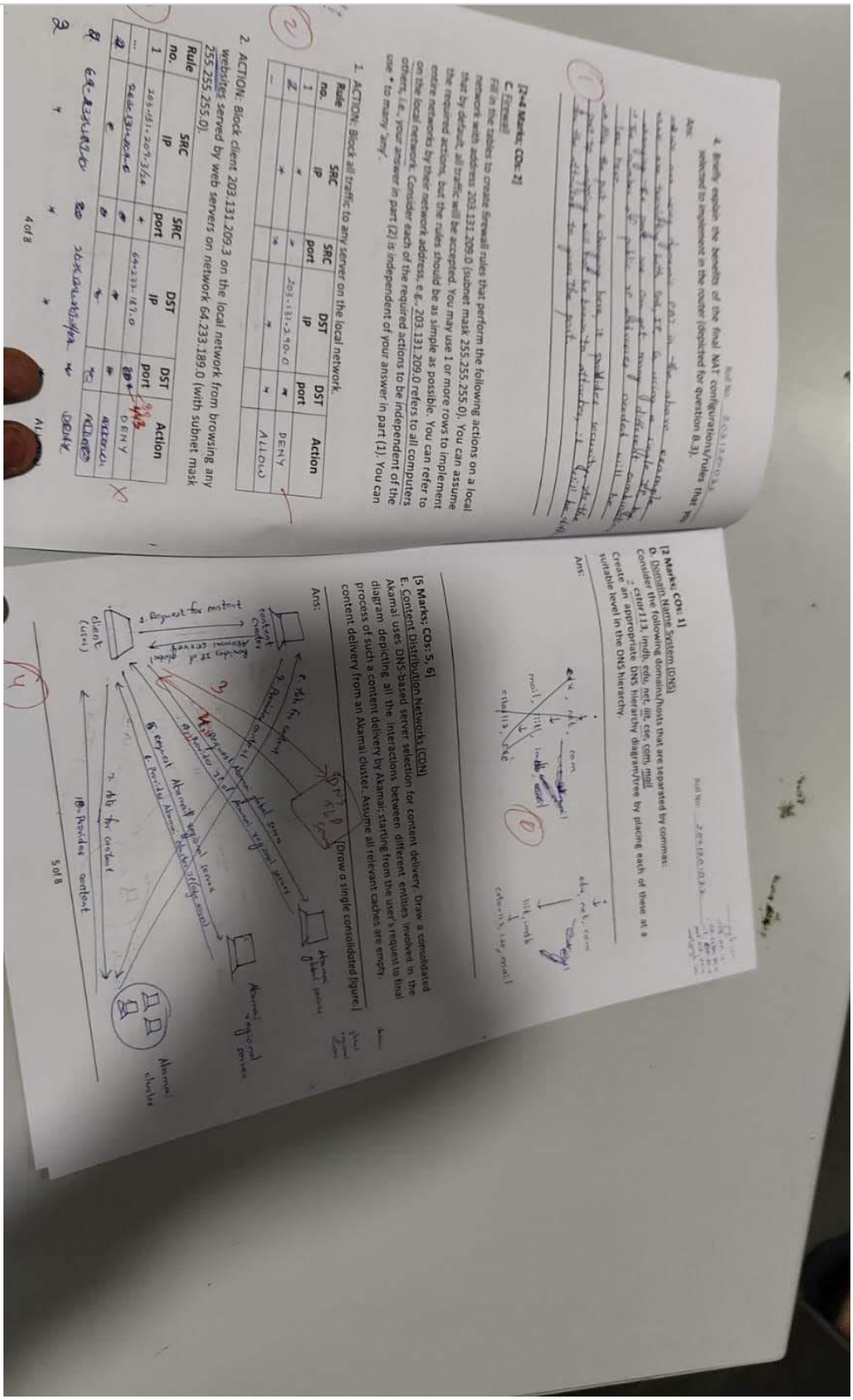
General Instructions to the students

1. Keep your permanent/temporary Student ID on the desk for the entire duration of examination.
2. Borrowing items from other students in the examination hall is prohibited.
3. If any student is found indulging in malpractice or copying in the examination hall, the student will be given an 'F' grade for the course and may be debarred from writing other examinations.

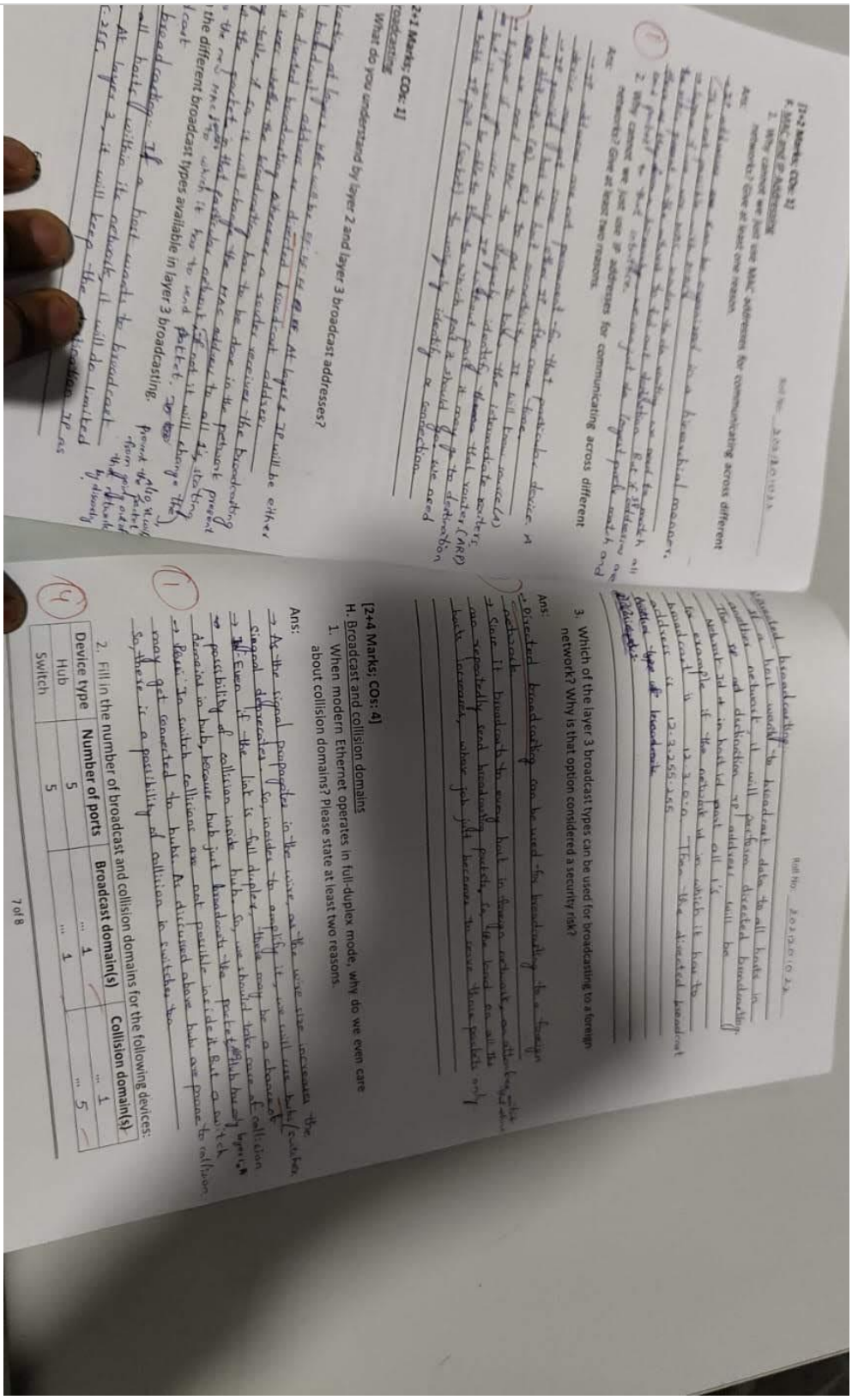
Space for grading (to be used by the faculty)

1 of 8

ACN



ACN



[2+2 Marks; COs: 2]
1. Why cannot we just use MAC addresses for communicating across different networks? Give at least one reason.

Ans:

2. Why cannot we just use IP addresses for communicating across different networks? Give at least two reasons.

Ans:

[2+1 Marks; COs: 1]
What do you understand by layer 2 and layer 3 broadcast addresses?

Ans:

3. Which of the layer 3 broadcast types can be used for broadcasting to a foreign network? Why is that option considered a security risk?

Ans:

[2+4 Marks; COs: 4]
H. Broadcast and collision domains
1. When modern Ethernet operates in full-duplex mode, why do we even care about collision domains? Please state at least two reasons.

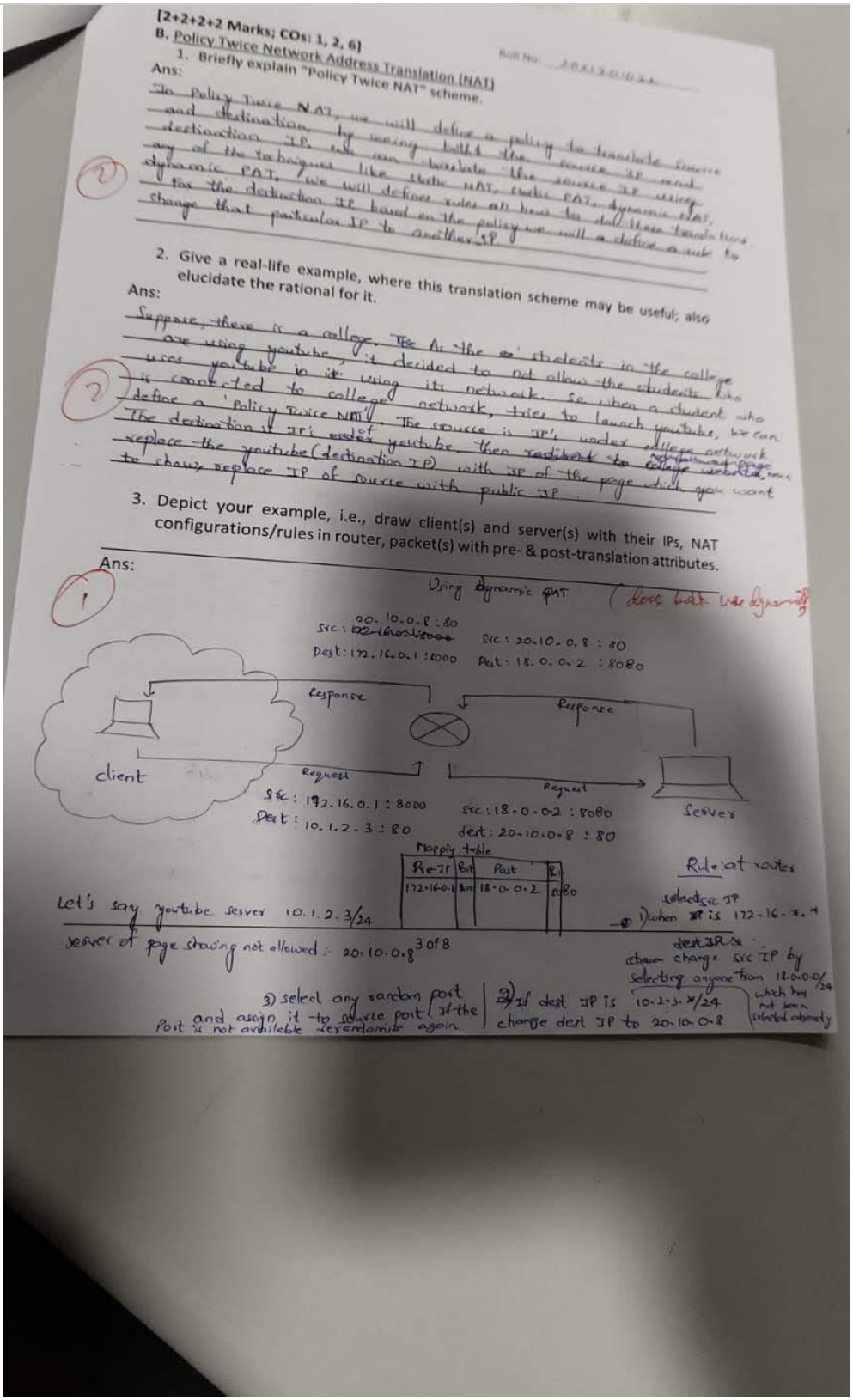
Ans:

2. Fill in the number of broadcast and collision domains for the following devices:

Device type	Number of ports	Broadcast domain(s)	Collision domain(s)
Hub	5	... 1	... 1
Switch	5	... 1	... 5

7 of 8

ACN



[2+2+2+2 Marks; COs: 1, 2, 6]

B. Policy Twice Network Address Translation (NAT)

1. Briefly explain "Policy Twice NAT" scheme.

Ans:

In Policy Twice NAT, we will define a policy to translate source and destination by using both the source IP and destination IP. We can translate the source IP using any of the techniques like static NAT, cyclic PAT, dynamic PAT. We will define rules on how to do these translations for the destination IP based on the policy we will define a rule to change that particular IP to another IP.

2. Give a real-life example, where this translation scheme may be useful; also elucidate the rational for it.

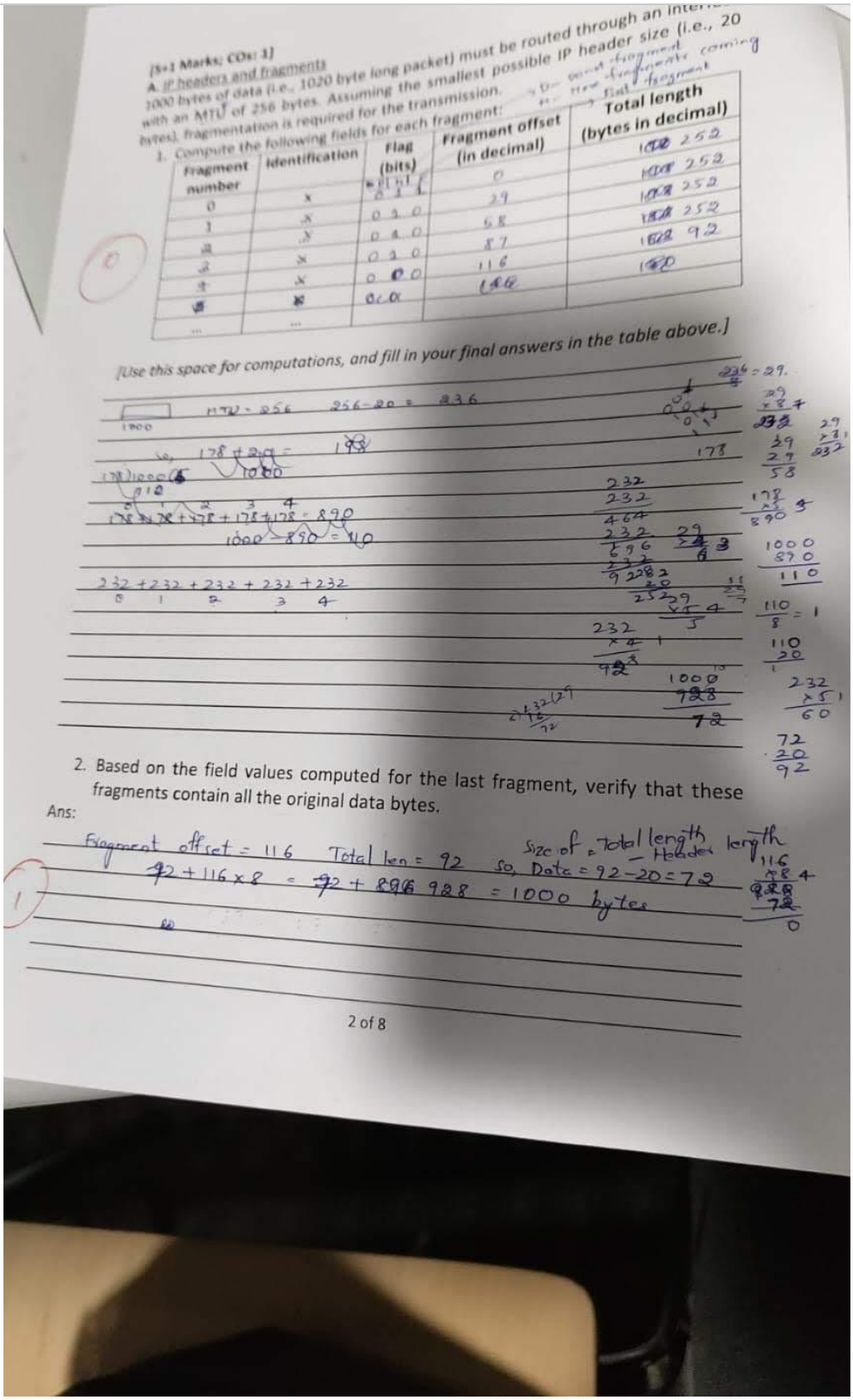
Ans:

Suppose there is a college. The Admin of the college decided to not allow the students who are using youtube, it decided to not allow the students who uses youtube in its using its network. So when a student who is connected to college network, tries to launch youtube, we can define a 'Policy Twice NAT'. The source is IP's under college network of youtube. Then redirect to college network. The destination IP is under of youtube. Then replace the youtube (destination IP) with IP of the page which you want to show, replace IP of source with public IP.

3. Depict your example, i.e., draw client(s) and server(s) with their IPs, NAT configurations/rules in router, packet(s) with pre- & post-translation attributes.

Ans:

ACN



[5+1 Marks; COs: 1]

A. IP headers and fragments

1000 bytes of data (i.e., 1020 byte long packet) must be routed through an inter... with an MTU of 256 bytes. Assuming the smallest possible IP header size (i.e., 20 bytes), fragmentation is required for the transmission.

1. Compute the following fields for each fragment:

Fragment number	Identification	Flag (bits)	Fragment offset (in decimal)	Total length (bytes in decimal)
0	x		0	
1	x		29	
2	x		58	
3	x		87	
4	x		116	
...	...			

[Use this space for computations, and fill in your final answers in the table above.]

2. Based on the field values computed for the last fragment, verify that these fragments contain all the original data bytes.

Ans:

Fragment offset = 116 Total len = 92 So, Data = 92 − 20 = 72

92 + 116 × 8 = 92 + 896 = 988 = 1000 bytes

2 of 8

ACN