

ECSE-6600: Internet Protocols Quiz 1

Time: **60 min (strictly enforced)**

Points: **50**

YOUR NAME (1 point!):

Be brief, but DO NOT omit necessary detail

{Note: Copying text directly from the slides or notes will not earn (partial) credit. Brief, clear and consistent explanation will.}

I.[4 pts* 6 = 24] Below, you are give a true or false statement and asked a follow up short question.

1. **False statement:** When an 800-byte packet is fragmented at a link whose MTU = 580 bytes, the fragment offset in the second fragment is set to 68.

Qn: What is the fragment offset in the second fragment ?

2. **False statement:** “Connectivity” is the same as getting a physical link.

Qn: Explain how connectivity is a virtualization of a physical link.

3. ***False statement:*** A layer-2 switch is a router.

Qn: Explain how layer-2 and layer-3 switches are different from simple bridges and routers.

4. ***True statement:*** Statistical multiplexing is useful when the peak rate is much larger than the average rate.

Qn: Explain how statistical multiplexing relates to peak/average rates, and metrics like: utilization, queuing delay and cost of the resource.

5. ***False statement:*** Subnet masking solves the internetworking problem of heterogeneity.

Qn: What protocol concepts are used to solve the problem of heterogeneity?

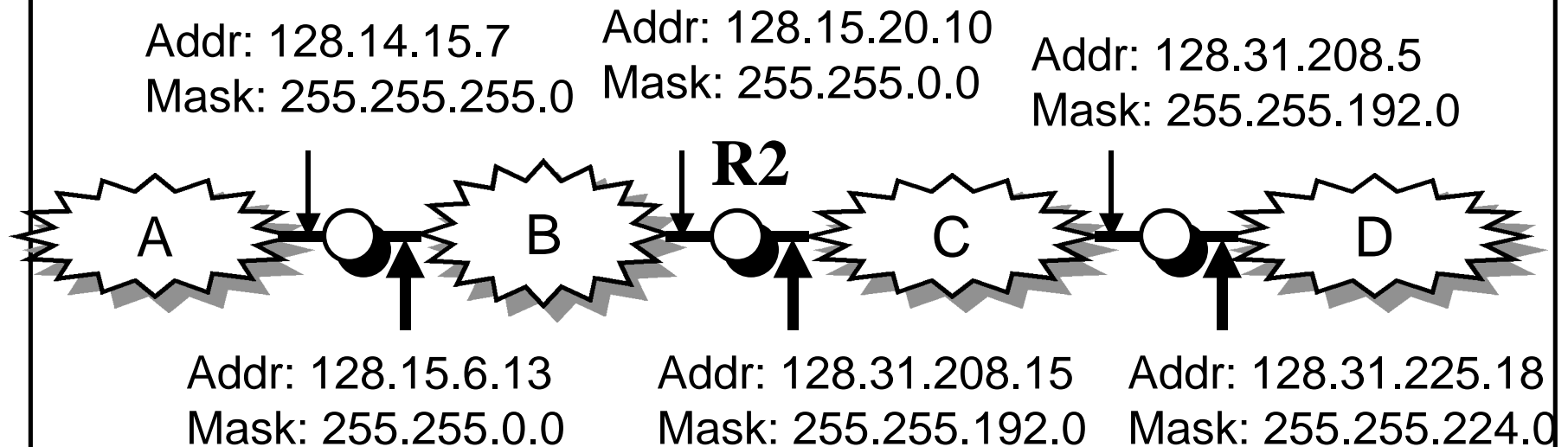
6. ***True statement:*** Address hierarchy supports inter-network scalability.

Qn: Exactly how does address hierarchy help support scalability?

II. [7 pts] Why is classful addressing inefficient ? Explain how subnet masks and VLSMs help to address this problem.

III. [7 pts] Filtering leads to efficiency and hence scalability. Explain what filtering functionality is provided in: repeaters/hubs, bridges and routers.

IV. [11 pts] Consider the enterprise inter-network which uses VLSMs.



A) (3 pts) Consider two hosts H1 and H2 configured with addresses 128.31.30.40 and 128.31.198.6. Which network if any, can they be placed on (among A,B,C,D), and what would their subnet mask be ?

B) (6 pts) Fill up the routing table at router R2. One example entry is filled up for you.

<u>Destination</u>	<u>Mask</u>	<u>Next Hop</u>
128.14.15.0	255.255.255.0	128.15.6.13
?	?	?
?	?	?
?	?	?

C) (2 pts) Could two hosts have the same IP address but different subnet masks ? Why or Why not ?