

# Networks Homework 1 (Due Friday 8/21/2020)

1. List the OSI layer number that best matches the description.
  - (a) \_\_\_\_\_ If I invent a new protocol that is like email but way cooler, it would most likely be at this layer.
  - (b) \_\_\_\_\_ This layer is the one most responsible for making sure everything that was sent by one side of the connection has been received and not lost.
2. If you have an email account with company called Okapi Email, which of the following are likely phishing sites?
  - (a) mail.okapiemail.com
  - (b) okapiemail.mail.com
  - (c) okapi-email.superiorwebhosting.com
  - (d) mailbox-beta-version.okapiemail.com
3. In the bizarre domain name com.edu, which is the TLD, com or edu?
4. Do a whois lookup to and find when the domain name google.com was first activated.
5. Use nslookup or dig to find the IP address of bing.com. Include a screenshot showing the command and its output.
6. If you visit the website icecream.na, what country would that domain mostly likely be from?
7. The \_\_\_\_\_ DNS servers have information on the names and IP addresses of the authoritative DNS servers for TLDs.
8.
  - (a) Typically, a DNS resolver will have to contact at least how many name servers to do a full DNS query?
  - (b) Often the resolver will not have to contact any name servers to answer someone's request. Why not?
9. If you believe your ISP's DNS resolver is not giving you the correct IP address answers to your queries, what can you do to make it so that you do get correct answers?
10. Suppose the administrators of the very popular domain homeworkanswers.brianheinold.net internally want to store all the content for that domain on a machine with domain name p314159.brianheinold.net. What specific type of DNS resource record must they create so that people looking for homeworkanswers.brianheinold.net will be directed to that machine?
  - (a) MX    (b) A    (c) AAAA    (d) CNAME    (e) PTR    (f) TXT    (g) SOA
11. Use the following output from the dig command to answer the questions below.

```
PS C:\Users\heinold> dig kitchenaid.com

; <<>> DiG 9.9.11 <<>> kitchenaid.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 55247
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
;; EDNS: version: 0, flags:; udp: 512
;; QUESTION SECTION:
;kitchenaid.com.                IN      A

;; ANSWER SECTION:
kitchenaid.com.                300     IN      A      54.175.185.69
```

```
;; Query time: 54 msec
;; SERVER: 75.75.76.76#53(75.75.76.76)
;; WHEN: Sat Nov 02 16:08:55 Eastern Daylight Time 2019
;; MSG SIZE rcvd: 59
```

- (a) 75.75.76.76 is the address of
- (a) my ISP's caching DNS resolver
  - (b) kitchenaid.com
  - (c) KitchenAid's name server
  - (d) the name server of KitchenAid's DNS provider
  - (e) a root DNS nameserver
- (b) When will this entry expire from the DNS cache?
- (a) On November 2 at 4:08 pm
  - (b) In 54 milliseconds
  - (c) In 5 minutes from when it was made
  - (d) In 5 hours from when it was made
  - (e) There is no way to tell.