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A1. Multiple-choice questions (3 points per question)

A1-1. What are the examples of malware?

　　　P. adware, **Q.** vaporware, **R.** rootkits, **S.** zombies

　(A) PQR　(B) QRS　(C) PRS　(D) PQS

A1-2. What are the strategies that support green computing?

P. using energy efficient hardware	**Q.** regulating manufacturing processes
R. recycling	**S.** creating web apps instead of desktop apps

　(A) PQR　(B) QRS　(C) PRS　(D) PQS

A1-3. What are likely complaints of someone who spends his or her workday using the computer?

　　　P. lower back pain, **Q.** emotional fatigue, **R.** high blood pressure, **S.** muscle fatigue

　(A) PQR　(B) QRS　(C) PRS　(D) PQS

A1-4. What could identify broadband Internet connections?

　　　P. cellular radio network, **Q.** DSL, **R.** fixed wireless, **S.** Wi-Fi

　(A) PQR　(B) QRS　(C) PRS　(D) PQS

A1-5. What are permissible under a single-user license agreement?

　　　P. Christine leases her copy of Dreamweaver.

　　　Q. Jamie installs Quark Xpress on a single computer.

　　　R. Phuong-Dao makes one copy of Microsoft Office 2013 as a backup.

　　　S. Isaiah sells his copy of Adobe Photoshop CS6, having removed it from his computer first.

　(A) PQR　(B) QRS　(C) PRS　(D) PQS

A1-6. What are true of the new multi-core processor you have just purchased?

　　　P. The multi-core processor emits less heat inside the case.

　　　Q. The multi-core processor requires a lower level of power consumption.

　　　R. The multi-core processor is more energy efficient than separate multiple processors.

　　　S. Each processor core on the multi-core processor runs at a faster speed than a single-core processor.

　(A) PQR　(B) QRS　(C) PRS　(D) PQS

A1-7. What are the uses of RFID?

P. checking out library books	**Q.** managing inventory
R. routing bank checks	**S.** tracking airline baggage

　(A) PQR　(B) QRS　(C) PRS　(D) PQS

A1-8. What is the right sequence identifying three types of RAM from the slowest to the fastest?

　　　P. SRAM, DRAM, MRAM　　**R.** MRAM, SRAM, DRAM

　　　Q. DRAM, SRAM, RDRAM　**S.** SRAM, MRAM, DRAM

　(A) P　(B) Q　(C) R　(D) S

A1-9. What are the true statements regarding DRAM?

     P. The synchronous DRAM chips are synchronized to the system clock.

     Q. Double Data Rate SDRAM (DDR SDRAM) chips are even faster than SDRAM chips

     R. Many variations of DRAM chips exist, most of which are faster than the basic DRAM.

     S. Dynamic RAM (DRAM) chips are faster and more reliable than any version of SDRAM chips.

  (A) PQR　(B) QRS (C) PRS (D) PQS

A1-10. What are the true statements regarding Application?

  P. You can create the application to be available for download only.

  Q. To use applications, a computer must be running an operating system.

  R. Software developers typically cannot incorporate freeware in applications they intend to sell.

  S. CAD is a sophisticated type of application software that assists a professional user in creating scientific designs.

(A) PQR　(B) QRS (C) PRS (D) PQS

A2. Matching questions (2 points per question)

(1) ASCII　(2) Cloud computing　(3) Digital Millennium Copyright Act　(4) Domain name
(5) DoS attack　(6) FTTP　(7) iris recognition system　(8) Mashup　(9) VoIP　(10) W3C

a. Biometric device used in high security areas.

b. Makes it illegal to circumvent antipiracy schemes in commercial software.

c. An assault whose purpose is to disrupt computer access to an Internet service.

d. Oversees research and sets standards and guidelines for many areas of the Internet.

e. Type of broadband Internet service that uses fiber-optic cable to provide high-speed Internet access to home and business users.

f. Your Internet service provider supplies this, for an email address.

g. Uses the Internet instead of the public switched telephone network to connect a calling party to one or more called parties.

h. An environment of servers that house and provide access to resources users access through the Internet.

i. Application that incorporates data from multiple providers into a new application.

j. The most widely used coding scheme to represent a set of characters.

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B1. Multiple choice (15%)

(a) Which of the following can detect problems—such as why traffic is flowing slowly—on networks that use the TCP/IP protocol?

a. Ethernet analyzers
b. bit monitoring scripts
c. torrent flow apps
d. packet sniffer software

(b) How are standards such as EDI used by businesses?

a. to secure their network
b. to define how data transmits across transmission media
c. as a service for transferring funds
d. to classify their network cable types in order to connect devices

(c) You are using a technology to enable two devices to share contacts when they touch. What is the name for this technology?

a. NLC
b. NFC
c. AFD
d. DDF

(d) What is virtual memory?

a. data stored in the cloud
b. where instructions are stored while waiting for a device to become idle
c. a portion of the hard disk designated to function as additional RAM
d. data that is not stored when the computer is turned off

(e) Which of the following kinds of devices are servers connected to a network with the sole purpose of providing storage?

a. RAID
b. RAS
c. NAS
d. RAN

B2. Please define and explain the protocol layers used on Internet (5%) Please list the IP address quantity for IPv4 and IPv6 respectively. (4%)

B3. Database design

(a) Please design a database E-R diagram for the following description. "There are many offices with its own office ID and Tel to process client orders in a taxi company. There are also many taxis with its driver info and taxi model. Database needs to keep the client information (ID, name, Tel) and the client's registration office. The transportation data of client will be kept in database including the collecting address, the delivery address, the office contacted, the taxi ID and the transportation fee." (5%)

(b) Continue the question (a). Transfer the E-R diagram to schema (5%)

(c) Data analytics becomes an import issue in many domains. Please **define and explain** what 3V are in big data. (6%)

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B4. (10%) Please write down a pseudo code to print a pyramid (use * to represent nodes) with hight h. i.e. input h=3, the pyramid will be :

```
  *
 ***
*****
```