Sept. 7th.

R1.  The word protocol is often used to describe diplomatic relations.
     Give an example of a diplomatic protocal.

     Ans:   HTTP ; TCP/IP  etc. WTO.

R2.  What is the difference between a host and an end system? List the
     types of end systems. Is a web server an end system?

     Ans:  No difference. Including PCs. smartphones. workstations, Web Server
           Mail servers, etc.

R3.  List six access technologies. Classify each one as residential access, company
     access, or mobile access.

     Ans:  Residential Access: Dial-up Internet access; DSL; Hybird-fiber-coaxial access;
           Company  Access: Ethernet ; WiFi
           Mobile  Access : 4G or 5G.

R4.  What is an client program? What is a server program? Does a server program request
     and recieve services from a client program?

     Ans: A client program is a program running on one end system that requests
          and receives a service from a servere program running on another end
          system. The client - server model includes Web, email, file transfer
          remote login and many other application

R5. List the available residential access technologies in your city. For each type of access, provide the advertised downstream rate, upstream rate, and monthly price.

Ans: City: Beijing.    ↑ 100 Mbps  ↓ 100 Mbps.
Tech: Optical Fiber.
https://www.bj96007.com/product/100134/Monthly price: 42.00 RMB

R6. What are some of the physical media that Ethernet can run over?

Ans: Ethernet most commonly runs over twisted-pair copper wire. and "thin" coaxial cable. It also can run over fibers optic links and thick coaxial cable.

R8. Describe the most popular wireless Internet access technologies today. Compare and contrast them

Ans.

|  | WiFi | 4G/5G |
|---|---|---|
| Range | X | ✓ |
| Speed | ✓ | ✓ |
| Stability | ✓ | X |

R9. Dial-up modems, HFC, and DSL are all used for residential access. For each of these access technologies, provide a range of transmission rates and comment on whether the transmission rate is shared and dedicated?

Ans.

| | UP | DOWN | BANDWIDTH |
|---|---|---|---|
| Dial-up modems | 56Kbps | 56Kbps | dedicated |
| ISDN | 128Kbps | 128Kbps | dedicated |
| ADSL | 1-8 Mbps ⇒ 1 Mbps | | dedicated |
| HFC | 10-30Mbps ⇒ less than few Mbps | | shared |
| FTTH | 2-10Mbps | 10-20Mbps | dedicated |

R₁₀ What is the transmission rate of Ethernet LANs? For a given transmission rate, can each user on the LAN continuously transmit the rate?

Ans: Ethernet LANs have transmission rates of 10Mbps, 100Mbps, 1Gbps and 10Gbps. No.

P₁. Consider the circuit-switched network in Fig 18. Recall that there are n circuits on each link?

    a. What is the maximum number of simultaneous connections that can be in progress at any one time in this network?

        Ans: 4n.

    b. Suppose that all connections are between the switch in the upper-left-hand and the switch in the lower-right-hand corner. What is the maximum number of simultaneous connections that can be in progress?

        Ans 2n.