Networks and Protocols

Tutorial (Week 1)

Dr Md Hasanuzzaman Sagor

m.h.sagor@qmul.ac.uk

School of Electronic Engineering & Computer Science

1. a) List all layers of the OSI reference model.
   b) Which layers are responsible for the following functions:
       i) Error detection and control
       ii) Establishment and terminations between hosts/applications

2. List down some characteristics of Personal Area Network.

3. What is meant by the following terms?
       i) Simplex
       ii) Full Duplex
       iii) Point-to-Multipoint line configuration

4. Construct a Hybrid topology for a network where four computers are connected in a fully connected mesh topology and three computers connected in a star topology.

5. What do the following terms stand for?
       i) TCP/IP   ii) UDP
       iii) PDU   iv) WiMAX
       v) D2S   vi) CSMA/CD

6. What does a sensor and an actuator do when used in IoT devices? What are the three primary factors driving the deployment of sensor technology?

7. a) What are the key features of the Bluetooth protocol?
   b) Bluetooth Low Energy (BLE) consumes about half the power of a Bluetooth Classic device. What is the mechanism adopted to enable this energy conservation?

8. What are the characteristics of Wifi and Low Power Wifi?

9. Describe the two different types of MAC protcols.

10. Slotted Aloha is a contention-based access technique. Briefly describe its procedure.

11. In CSMA/CD protocol, a truncated exponential back-off mechanism is employed after collisions. Explain how this mechanism works.