Note: choose five questions only

Q1) Define the functions for each the following:
   a- Hub, b- Gateway, c- Backbone cable, d- DQDB, e- SMTP, f- UDP. 
   (12 marks)

Q2) a- Define the Protocol stack, and explain how to provide communication between protocols consist of five-layers.
   b- Explain data flow types with examples (using the design in your examples).
   (12 marks)

Q3) Give short answers for the following:
   a- The basic processes for network layer in TCP/IP protocol.
   c- The differences between connection-oriented and connectionless.
   d- The advantage for Maximum Transmission Unit (MTU).
   e- Explain the transport layer functions.
   (12 marks)

Q4) a- Explain the principles that were applied to arrive at the seven layers in OSI model.
   b- Define mesh topology and give example to find the number of physical links in a fully connected mesh network with \( n \) nodes.
   (12 marks)

Q5) a- LANs are distinguished from other networks by some characteristics, what are they?
   b- Explain the main types for Baseband Coaxial Cable.
   (12 marks)

Q6) a- Comparison of the OSI and TCP Reference Models.
   b- Comparison of Fiber Optics and Copper Wire.
   (12 marks)