Useful formulae: [Note that you may not need all of these formulae. Use as needed]

- Utilization:
  - $transmissionDelay\ (Ttrans) = \frac{L\ (bits)}{R\ (bps)}$
  - $propagationDelay\ (Tprop) = \frac{Distance}{S}$, S≈2x$10^8 m/s$ (electromagnetic speed in copper)
  - $a = \frac{Tprop}{Ttrans} = \frac{propagationDelay}{transmissionDelay}$
  - For Ethernet $u = \frac{1}{(1+5a)}$, where $a = \frac{Tprop}{Trans} = \frac{propagationDelay}{transmissi\ onDelay}$
  - For token ring (release after transmission) $u = \frac{1}{(1+\frac{a}{N})}$
  - For token ring (release after reception) $u = \frac{1}{(1+a)}$
  - FDDI is token ring (with release after transmission) with 100Mbps
  - For (pure) ALOHA the efficiency (or utilization) = $Np(1\text{-}p)^{2(N-1)}$.
  - For slotted ALOHA the efficiency (or utilization) = $Np(1\text{-}p)^{N-1}$

- Some acronyms (this list is not exhaustive):

= Wireless:
- ***CSMA***: Carrier Sense Multiple Access, ***CD***: Collision Detection, ***CA***: Collision Avoidance
- ***RTS***: request to send, ***CTS***: clear to send, ***RSSI***: received signal strength indicator
- ***AP***: access point, ***MSC***: mobile switching center, ***MAHO***: mobile-assisted hand-off

= Multiple Access:
- ***FDMA***: Frequency Division Multiple Access, ***TDMA***: Time Division Multiple Access
- ***SSMA***: Spread Spectrum Multiple Access, ***CDMA***: Code Division Multiple Access
- ***DSSS***: Direct Sequence Spread Spectrum (same as CDMA), ***PN***: pseudo-noise
- ***FHMA***: Frequency Hopping Multiple Access, ***SDMA***: Space Division Multiple Access

= Routing:
- ***BGP***: Border Gateway Protocol, ***RIP***: Routing Information Protocol
- ***OSPF***: Open Shortest Path First, ***DV***: distance vector, ***LS***: link state
- ***CIDR***: Classless InterDomain Routing, ***MPLS***: multi-protocol label switching
- ***SDN***: Software-Defined Network, ***CDN***: Content-Distribution Network
- ***PIM***: Protocol Independent Multicast, ***SM***: Sparse Mode, ***DM***: Dense Mode
- ***DVMRP***: Distance Vector Multicast Routing Protocols, ***MOSPF***: Multicast OSPF