ETSI, ITU, IEEE, 3GPP, IETF

One exam question definitely on Wi-fi, might be what is IEEE  
Design a Wi-fi network for the University, briefly explain each of the sub domains of that network

Wireless LANs  
Mobile Ad-Hoc Networks (MANETs)  
Multi-hop Routing (IETF MANETs)

802.11 Configuration  
ESS Extended Service Set  
BSS Basic Service Set  
DS Distribution System Services  
Access Points (AP) and stations (STA)  
Distribution System interconnects multiple cells via Access Points to form a single Network

Access Points  
-Stations select an AP and Associate with it  
-Support Roaming  
--IAPP Inter Access Point Protocol IEEE 802.11f  
--Mobile IP  
-Provide other functions  
--time synchronization (beaconing)  
--power management support (if any)  
--point coordination function (PCF) (if any)  
-Traffic typically (but not always) flows through AP (conditioning and provisioning)   
--direct communication possible  
-In an infrastructure BSS, all mobile stations communicate with the AP  
-Disadvantage:   
--bandwidth is consumed twice than directional communication between STAs  
--more contentions and more collisions  
-Advantage:   
--easily solve hidden node problem  
--provide power savings function  
--meet the AAA (authentication, authorisation, accounting) architecture  
--provide per flow bandwidth control, QoS guarantee  
-MAC functionality  
-Independent and Infrastructure configuration support  
--Each BSS has a unique 48 MAC address  
--Each ESS has a variable length address  
-CSMA with collision avoidance (CSMA/CA)  
--MAC level acknowledgement (positive acknowledgement)  
--allows for RTS/CTS exchange  
---hidden node protection  
---virtual carrier sense  
---bandwidth saving  
--MSDU fragmentation  
--Point Coordination Function option (AP polling)  
-Roaming support within an ESS  
--station scans for Aps, association handshakes  
-Power management support  
--stations may power themselves down  
--AP buffering distributed approach for IBSS  
-Authentication and Privacy  
--Optional support of Wired Equivalent Privacy (WEP)  
--Key exchange  
--Authentication handshakes defined  
--IEEE 802.1x spec.enhances authentication control  
--IEEE 802.11i draft enhances security

Four PHYs  
-Frequency Hop Spread Spectrum FHSS  
--2.4Ghz band, 1 and 2 mbps 2GFSK, 4GFSK  
-Direct Sequnce Spread Specrum DSSS  
--2.4Ghz, 1 and 2 mbps DBPSK, DQPSK  
--2.4Ghz, 5.5 and 11mbps CCK,PBCC,QPSK,DQPSK,BPSK  
--2.4Ghz, 22 and 33mbps PBCC-22, PBCC-33  
-Baseband IR  
--1 and 2mbps, 16-PPM, 4-PPM  
-OFDM  
--2.4Ghz (IEEE 802.11g)  
--5Ghz (IEEE 802.11a)  
--6,9,12,18,24,36,48,54 mbps

PSK modulation = f(x) = A sin(2πf+Φ)  
16-QAM, 64-QAM