Assignment

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## General

1. Describe OSI 7 layers with example protocols in each layer.
2. What is frequency hopping? What are the frequency hopping parameters?
3. What is a signaling protocol?
4. Explain the advantages of SS7 signaling compared to CAS

## Global System for Mobile Communications (GSM)

1. Draw GSM architecture with interfaces.
2. Draw GSM protocol stack.
3. Categorize the GSM channel types.
4. What are the uplink and downlink band of GSM?
5. Describe the following Terms.
   1. MSC
   2. HLR
   3. VLR
   4. BTS
   5. BSC
   6. EIR
   7. AuC
6. Describe call flow of GSM mobile Originating call and terminating voice call using diagrams.
7. Describe call flow of GSM mobile Originating sms and terminating sms using diagrams.
8. Explain briefly,
   1. SGSN/GGSN
   2. GMSC
   3. SMSC
9. What are the functions of SGSN & GGSN?
10. What are the functions of SMSC?
11. Define the following Terms
    1. IMSI
    2. IMEI
    3. ICCID
    4. MSIDN
    5. LAC
    6. CGI
12. Draw the GPRS network Architecture
13. Explain types of Handovers

## Universal Mobile Telecommunications System (UMTS)

1. Define,
   1. NodeB
   2. RNC
   3. HSDPA/HSUPA
   4. MIMO
2. Draw 3G network architecture with interfaces and what are the protocols used?
3. What are 3G UMTS physical& logical channels?
4. What are the main functions of RNC?

## 4G

1. Draw the LTE network architecture with interfaces.
2. What is VoLTE?
3. Explain OFDM concept

## 5G

1. Draw the 5G network architecture with interfaces.
2. Explain features of 5G

## Wireless fidelity (WIFI)

1. Draw the Wi-Fi Network Architecture.

## IP Multimedia Subsystem (IMS)

1. Draw the IMS architecture.

## Transmission

1. Explain Briefly,
   1. SDH network
   2. PDH network
2. What are the equipments used in transmission network?
3. Name the types of Huawei microwave links, Draw the structure of any of those links
4. Explain the safety/redundancy methods used in microwave links.

## Radio Network Operations (RNO)

1. What are the equipments site Engineer has to carry when attending a site surveying?
2. What are the information contains in a site surveying report?
3. What are the components of a BTS?
4. What is PAT?
5. What are the tools used for drive testing?
6. What do you mean by antenna tilt?
7. Explain the process of planning an IBS.
8. What are the components of DAS (distributed Antenna System)?

## HLR Features

1. Briefly Explain the following processes
2. Roaming
   1. Inbound roaming
   2. Outbound roaming
3. Call Forwarding
   1. CFU
   2. CFB
   3. CFNRc
   4. CFNRy
4. Call Barring
5. Call Waiting
6. Call Diversion
7. Call Conference
8. Miscall Alert

## IN Operations & Value Added Services (VAS)

1. What are the protocols used in intelligent network?
2. Draw a diagram to show prepaid call flow.
3. What are VAS (value Added Services)
4. What is OCS?
5. What are the basic functions of OCS nodes?
6. Explain PCRF

## Networking

1. What is an IP Address?
2. What is Protocol?
3. What are the important topologies for networks?
4. Name the classes of IP addresses with IP range?
5. What is DHCP?
6. What is the length of ipv6 address?(No of bits)
7. What are the Difference between TCP and UDP?
8. Name two routing protocols & Explain
9. How many layers are there under TCP/IP? What are they?
10. What is a MAC address?
11. List the color codes of 568A & 568B cable standards separately.
12. What are three benefits of implementing VLANs?
13. What is the difference between cross over cable & straight through cable?
14. Define Bandwidth & Latency
15. What are the categories of Transmission media?