B.E. (EXTC) (Sem-VII) (CCB) Date-18/11/19

(3 Hours) [Total Marks : 80]

Please check whether you have got the right question paper.

N.B.: 1) **Question No. 1 is compulsory.**
2) **Attempt any three from remaining questions.**

1. a) Define following terms. **(05)**
   i) Control channel
   ii) Forward channel
   iii) Hand-off
   iv) Reverse channel
   v) Page
   b) What is frequency Re-use? Derive the relationship between capacity C and cluster size N. **(05)**
   c) List and discuss factors influencing small scale fading. **(05)**
   d) Explain soft-hand-off and power control in 3G. **(05)**

2. a) For given path loss exponent (a) n = 4 and (b) n = 3, find the frequency re-use factor and the cluster size that should be used for maximum capacity. The S/I ratio of 15db is minimum required for satisfactory forward channel performance of a cellular system. There are six co-channel cells and all of them at same distance from mobile use suitable approximations. **(10)**
   b) Draw the block diagram and explain GSM architecture in detail indicating all the interfaces. **(10)**

3. a) Explain IS-95 forward and reverse channel structure in details. **(10)**
   b) Describe GSM frame structure in detail. **(10)**

4. a) Compare IS-95, W-CDMA and CDMA 2000 with respect to channel Bandwidth, chip rate, modulation schemes, data rates and frame size. **(10)**
   b) Sketch UMTS Network Architecture and explain it in detail. Give in brief Features and services provided by UMTS. **(10)**

5. a) Draw and explain 3GPP LTE architecture and also discuss frames and slots in LTE. **(10)**
   b) Explain the concept of MIMO with respect to 4G technology. **(10)**

6. Write short notes on **Any Two**:- **(20)**
   a) Indoor propagation Models
   b) Rake Receiver
   c) Software defined radio

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