

[3HRS]

MAXIMUM MARKS 80

1. Question no., 1 is compulsory.
2. Write any three questions from remaining five questions.
3. Assume suitable data where ever necessary.
4. Draw diagrams wherever required.

1. a] Define and explain following terms  
 i) Coherence Bandwidth ii) Coherence time iii) Doppler spread 05
- b] Why 120degree sectorization is preferred over 60degree sectorization in cellular technology. discuss in detail with reference to S/I calculations and handoffs 05
- c] What is OVSF in WCDMA what is its advantage over fixed spreading IS95 05
- d] What is timing advance in GSM explain in detail 05
- 2 a Discuss the various types of Handoffs from 2G to 4G with reference to technologies. 10  
 B How is the cell search and synchronization achieved in 3G? 10
3. a] Draw and explain 3G reference architecture 10  
 b] For a Rayleigh fading signal, compute the positive going level crossing rate for  $\rho=1$ . The maximum Doppler frequency ( $f_m$ ) is 20 Hz. What is the maximum velocity of the mobile for this Doppler frequency if the carrier frequency is 900 MHz? 10
- 4.a] Draw and explain protocol architecture of GPRS 10  
 b] Compare OFDMA and MC-CDMA techniques. 10
5. a] Explain RPE- LTP speech coder in GSM 10  
 b] What is the software-defined radio system? 10

6. Write short note on (any two)

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- a) Cognitive Transceiver Architecture
- b) Spreading codes used in CDMA
- c) Adaptive multi antenna Techniques

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