

**(3 Hours)**

**[Total Marks: 80]**

- N.B.:** (1) Question no 1 is compulsory  
 (2) Solve any three from remaining five  
 (3) Assume suitable data if required.  
 (4) Figures to the right indicate full marks.  
 (5) Draw neat diagrams wherever required.

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| <b>1</b>  | (a) What is timing advance in GSM?<br>(b) Explain Foliage loss in propagation.<br>(c) What is cell dragging and dwell time?<br>(d) How handoffs are prioritized  | <b>05</b><br><b>05</b><br><b>05</b><br><b>05</b> |
| <b>2.</b> | (a) If $bw=1.25\text{MHz}$ , $R=9600$ bps and minimum acceptable $E_b/N_0$ is found to be 10 dB determine the maximum no of users that can be supported in a single-cell CDMA system using a) omnidirectional base station antennas and no voice activity detection and b) 3 sectors at base station and activity detection with $\alpha=3/8$ assume the system is interference limited.<br>(b) Draw and explain 3GPP architecture | <b>10</b><br><b>10</b>                           |
| <b>3</b>  | (a) Draw and explain Signaling architecture of GSM.<br>(b) What is the concept of software Defined Radio   | <b>10</b><br><b>10</b>                           |
| <b>4</b>  | (a) Classify small scale fading based on Multipath Time Delay Spread and Doppler spread and explain in brief each type.<br>(b) Explain Block Call delayed and Block Call cleared System  | <b>10</b><br><b>10</b>                           |
| <b>5</b>  | (a) Draw reference architecture of GPRS and explain role of SGSN and GGSN<br>(b) Draw and explain IMT 2000 architecture  | <b>10</b><br><b>10</b>                           |
| <b>6.</b> | Write short note on<br>a) MIMO technique in LTE<br>b) Rake Receiver<br>c) Power control in CDMA 2000 and WCDMA   |  |