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| | **B.Tech Computer Engineering. VII Semester II Sessional Test – 2021** | |
| **Paper Code: CEN-702** | **MOBILE COMMUNICATION** | Max Time: 1 hrs. |
| **Note: Attempt All Questions** | | Max. Marks: 15 |

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| **Q1** | Assuming the power difference between the dedicated physical control channel (DPCCH) and dedicated physical data channel (DPDCH) of the WCDMA to be -3.0 dB for 12.2 kbps AMR speech, calculate the gain in the link budget in dB by reducing the AMR bit rate from 12.2 to 7.95 kbps, and by reducing the AMR bit rate from 12.2 to 4.75 kbps. | **5** |
| **Q2** | Using following data for GSM 1800 network,<br>i. Subscriber usage per month = 150 minutes.<br>i. Days per month = 24.<br>ii. Busy hour per day = 06.<br>iii. Allocated spectrum = 4.8 MHz.<br>iv. Frequency raise plan = 4/12.<br>v. RF channel with = 200 KHZ (full rate).<br>vi. Present number of subscribers in the zone = 50,000.<br>vii. Subscriber growth = 5% per year.<br>viii. Area of the zone = 5000 $km^2$.<br>ix. Initial installation bused on a four year design.<br>x. Capacity of a base station transceiver (BTS) = 30 Erlangs.<br>xi. Traffic capacity of a GSM cell at 2% GoS (using Erlang B table) = 8.2 Erlangs.<br>Calculate:<br>i. Average busy hour traffic per subscriber.<br>ii. Traffic capacity per cell.<br>iii. Required member of base stations per zone and<br>iv. The hexagonal cell radius for the zone. | **5** |
| **Q3** | Find the Autocorrelation and cross correlation in the Gold code sequence used in CDMA.<br>1 0 0 0 0 1 0 0 1 0 1 1 0 0 1 1 1 1 1 0 0 0 1 1 0 1 1 1 0 1 0 ( $1+x^3+x^5$ , seed 00001)<br>0 1 0 0 0 0 1 0 0 1 0 1 1 0 0 1 1 1 1 1 0 0 0 1 1 0 1 1 1 0 1 ($1+x^3+x^5$ , seed 00010) | **5** |