B.E. Electronics Engineering Seven Semester

EN702 - Digital And Wireless Communication

P. Pages : 2 **GUG/W/18/1783**

Time : Three Hours * 1 3 9 4 * Max. Marks : 80

Notes : 1. All questions carry equal marks.
2. Illustrate your answers wherever necessary with the help of neat sketches.
3. Use of Erlang B and Erlang C chart is submitted.

1. a) Derive the expression for S/I for a cell. **8**

b) If a signal to interference ratio of 15 dB is required for satisfactory forward channel performances of a cellular system, what is the frequency reuse factor and cluster size that should be used for maximum capacity if path loss exponent is **8**
a) n = 4 b) n = 3
Assume there are six cochannel cells in the first tier, and all of them are at the same distance from the mobile. Use suitable approximation.

OR

2. a) Explain cell splitting and sectoring. **8**

b) A hexagonal cell within a four cell system has a radius of 1.387 km. A total of 60 channels are used within the entire system. If load per user is 0.029 Erlangs and A = 1 call/hour, or put the following for an Erlang C system that has 5% probability of a delayed call. **8**
How many users per square kilometer will this system support.

3. a) Explain DPSK transmitter and receiver with he help of a block diagram. **8**

b) Discuss $\Pi/4$ QPSK transmission and detection technique. **8**

OR

4. a) Draw and explain GMSK receiver. **8**

b) Explain the M-ary Quadrature amplitude modulation technique. **8**

5. a) Discuss the different equalizer. How are they classified. **8**

b) Describe the different block codes in brief. **8**

OR

6. a) Explain the properties of block code? **8**

b) How is syndrome calculation done in Reed Solomon codes. **8**

7. a) Enumerate the salient features of FDMA. Give its advantage. **8**

b) Find the intermodulation frequencies generated if a base station transmits two carrier frequencies at 1930 MHz and 1932 MHz that are amplified by a saturated dipping amplifier If the mobile radio band is allocated from 1920 MHz to 1940 MHz, designate the 1na frequencies that lie inside and outside the band. **8**

OR

8. a) What are the different packet radio protocols Hence explain pure ALOHA and slotted ALOHA. **8**

b) What are the important parameters in CSMA protocols Hence explain. of persistent CSMA, Non persistent CSMA, γ persistent CSMA. **8**

9. a) Draw and explain GSM architecture. **8**

b) What are the different types of GSM channels. Explain. **8**

OR

10. a) Explain GSM frame structure. **8**

b) Explain how error protection is provided for speech signals in GSM. **8**

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