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B. E. (Seventh Semester) Examination,
April-May 2016

(New Scheme)

(Et & T Engg. Branch)

WIRELESS COMMUNICATIONS

*Time Allowed : Three hours**Maximum Marks : 80**Minimum Pass Marks : 28*

Note : Attempt all questions. Part (a) from each question is compulsory. Attempt any two parts from parts (b), (c) and (d) of each question.

Unit-I

1. (a) Write down the advantages of CDMA. 2
- (b) Compare 2G, 3G & 4G generations of mobile radio communication. 7

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- (c) What is Wireless Communication? Compare various wireless communication systems. 7
- (d) With the increasing generation of wireless communication, user experience becomes the priority. Justify the sentence. 7

Unit-II

2. (a) Why cellular structure is preferred to be hexagonal? 2
- (b) Briefly explain about the channel assignment and Handoff strategies of mobile cellular communication. 7
- (c) Derive the relation between system capacity C & number of cells N for any GSM cellular architecture. Also comment on how frequency reuse is advantageous in cellular architecture. 7
- (d) If a signal to interference ratio of 15 dB is required for satisfactory performance of a cellular system, what is the frequency reuse factor & cluster size that should be used for maximum capacity if the path loss exponent is (a) $n = 4$, (b) $n = 3$. Assume that there are 6 co-channel cells in the first tier and all of them are same distance from the mobile. 7

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Unit-III

3. (a) Draw the Normal burst format for GSM network. 2
- (b) Explain in detail about the sub-systems of GSM architecture and also draw a flow chart, explaining the relation between BTS-MSC. 7
- (c) How mobility management is established? Explain the trade-off between paging cost and mobile station updation cost. 7
- (d) What is SS7? Explain the mapping of GSM network to OSI layer. 7

Unit-IV

4. (a) Explain the principle of P-N sequence generator. 2
- (b) What is constant envelope modulation? Explain the GMSK modulation technique. 7
- (c) Differentiate between DS-SS & FH-SS, spread spectrum techniques. 7
- (d) Compare the TDM, FDM, CDMA & OFDM techniques. 7

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Unit-V

5. (a) Explain the concept of scattering in Radio propagation mechanism. 2
- (b) Derive the criteria $\cos\theta_i > \lambda/8D$,
 where λ = wavelength of the incident wave.
 D = Depth of surface irregularity wave.
 $4\theta_i$ = incident angle.
 for concept of reflection. 7
- (c) Comment on following : 7
- (i) Path loss
 (ii) Combined signal loss
 (iii) Time dispersion
 (iv) Time Alignment
- (d) How channel coding and interleaving can help reducing the transmission loss of mobile radio propagation? 7

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