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M. TECH.

(SEM -II) THEORY EXAMINATION 2017-18

WIRELESS AND MOBILE NETWORKS

Time: 3 Hours *Total Marks: 70*

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a. How Frequency hopping is used For Security in Bluetooth?
b. What are TCP Connection Establishment and Tear Down?
c. What is Compulsory Tunnel?
d. What do you mean by Handoff?
e. What is the difference between 3g and 4g?
f. What is Wired Equivalent Privacy (WEP)?
g. Define WWW.

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a. Define Application layer for mobile networks.

b. What wireless transmissions on reliable transport protocols such as TCP.

c. A cellular carrier uses 900 MHz AMPS cellular phones that experience "fading" when the SNR is less than 13 dB. The carrier has determined that its customers do not find the fading of speech signals objectionable as long as fades do not happen more often than once per second. The carrier's service area is in an urban area and the maximum expected vehicle speed is 100 km/h. What minimum SNR would the carrier have to provide over the service area so that the fading of speech signals was not objectionable.

d. An FM receiver operating above threshold has an IF bandwidth of approximately 30 kHz. The maximum baseband (speech signal) frequency is 3 kHz.

(a) What is the modulation index?

(b) If the IF SNR is 15 dB, what is the approximate audio output S.

e. Explain HATA model and its COST 231 extension.

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

a. Explain Rayleigh and Ricean fading
b. Explain the generation, detection and bit error probability of QPSK techniques.

4. Attempt any *one* part of the following: 7 x 1 = 7

a. Drive an expression for M-ary Phase shift Keying and QAM and also drive their BER .
b. Explain the principle and operation of π/4 Differential QPSK transmission and reception.

5. Attempt any *one* part of the following: 7 x 1 = 7

a. Compare SDMA and FDMA with suitable applications. ii. Explain scheduling and power control.
b. Explain the technique in which the information signals of different users are modulated by orthogonal or non-orthogonal codes.

6. Attempt any *one* part of the following: 7 x 1 = 7

a. Explain in detail about CDMA with neat diagrams.
b. Explain the DSSS system model and synchronization loop for DSSS.

7. Attempt any *one* part of the following: 7 x 1 = 7

a. Explain BSS and ESS configuration of IEEE 802.11 WLAN.
b. Discuss the 3G overview and UMTS Basics.