B.Sc. Engg. / HD CSE 5th Semester (58)   19 February 2012 (Morning)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANIZATION OF ISLAMIC COOPERATION (OIC)
Department of Computer Science and Engineering (CSE)

MID SEMESTER EXAMINATION   WINTER SEMESTER, 2011-2012
DURATION: 1 Hour 30 Minutes   FULL MARKS: 75

CSE 4505: Communication Engineering

Programmable calculators are not allowed. Do not write anything on the question paper.
There are **4 (four)** questions. Answer any **3 (three)** of them.
Figures in the right margin indicate marks.

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1. a) What do you mean by Shannon Capacity? Name the issues in communication system design.   8
    b) Briefly explain TDMA and FDMA techniques. How can these two be used together?   10
    c) What is CDMA? Generate the Chip codes for eight stations by using Walsh table.   7

2. a) Write short notes on any two of the followings: 10
       i. Multipath fading   ii. Channel Coding   iii. Interleaving
    b) With the aid of Timing diagram, illustrate how a call initiated by a mobile station is established.   10
    c) Mention the different stages of GSM transmission process in appropriate order.   5

3. a) Neatly sketch the GSM system architecture. Briefly explain the major functionalities of different subsystems of GSM system model.   14
    b) Give the taxonomy of all logical channels available in GSM.   6
    c) How does HLR and VLR work for a roaming user?   5

4. a) With the aid of a diagram show the relationship between different areas in GSM.   5
    b) Draw the normal burst used in GSM. What is the significance of using Guard Period in GSM burst? Mention the duration of a burst and frame.   10
    c) Suppose a new mobile communication standard is specified as an alternative to GSM with the following frequency specifications: 10

    Uplink: 1500-1650 MHz
    Downlink: 1700-1850 MHz

    The new standard also specifies that two carrier frequencies would be working at 400 KHz distance for better voice quality. As a telecommunication engineer calculate the following specification of the new standard.
       i.   Wavelength
       ii. Bandwidth
       iii. Duplex Distance
       iv. No of Radio Channels