

## JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

## TEST -1 EXAMINATION- 2018

B.Tech. (CSE), 7<sup>th</sup> Semester

COURSE CODE: 15B1WCI731

MAX. MARKS: 15

COURSE NAME: Mobile Computing

COURSE CREDITS: 3

MAX. TIME: 1 HR

*Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

Q.1. (a) How will the next generation of wireless systems be different from the current 3G technologies? [2 Marks]

Q.1 (b) Identify some of the typical applications of mobile communication in context to business, emergencies etc. [2 Marks]

Q.2 What are the main problems of signal propagation? Why do radio waves not always follow a straight line? Why is reflection both useful and harmful? [2 Marks]

Q.3 What is the main physical reason for the failure of many MAC schemes known from wired networks? What is done in wired networks to avoid the effect? [3 Marks]

Q.4 Compare SDMA, TDMA, FDMA and CDMA mechanisms in context to approach, terminals, signal separation along with advantages and disadvantages of each scheme. [3 Marks]

Q.5 Free space propagation model is used to predict the received signal strength when transmitter and receiver has clear unobstructed line of sight path between them. The free space power received by a receiver antenna separated from a transmitting antenna by a distance  $d$  is given by Friis free space equation  $P_r(d) = P_t G_t G_r \left(\frac{\lambda}{4\pi d}\right)^2$  when the system losses are neglected. If the transmitter and receiver in a WLAN operating at the 2.4 GHz are separated by a distance of 100 m and the power transmitted by the transmitter is 20dB, what is the received power considering free space propagation and omni-directional antennas at both end? [3 Marks]