**(3 Hours)**                                      **[Total Marks - 80]**

N.B  i) Question no.**1** is compulsory

   ii) Solve any **three** from the remaining **five** questions

1    a.Explain the 'Zone planning' concept for the Indoor radio planning.                5

     b. What is the pole capacity of the cell ?                5

     c. Discuss the Advanced Antenna systems used in HSPA and LTE.                5

     d. With a suitable example explain category 1 and category 2 of sensor network    5

2    a. ] 'CDMA is interference limited system'.Justify and explain the need for        10
     power control.

     b. Give the detailed radio access network overview. Explain in detail functions    10
     of Node B and RNC also draw UTRAN logical architecture.

3    a. Explain Bluetooth security features and security levels with proper diagram     10

     b. Elaborate on Zigbee components  , topologies and protocol stack.                10

4    a. Explain  the relevance of CSMA/CA technique in WLAN and the concept of         10
     Hidden Node and Exposed Node.

     b. There are various resource constraints in the design and implementation of      10
     WSN . Justify.

5       a.  How does a typical RFID system work   ? Discuss its components and         10
         list its applications.
         b.  Why TCP and UDP protocols are unsuitable for implementation in WSN.       10

6     Write notes on **[any two]**                20

       a.  Middleware architecture of WSN

       b.  UWB technology

       c.  Routing challenges in WSN

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