

Duration: 3 Hours

[Max Marks:80]

- N.B. :** (1) Question No 1 is Compulsory.  
 (2) Attempt any three questions out of the remaining five.  
 (3) All questions carry equal marks.  
 (4) Assume suitable data, if required and state it clearly.

- Q1** Solve any four [20]  
 a) State the characteristics of WBAN.  
 b) Compare Zigbee and 6LoWPAN.  
 c) Explain link types of Bluetooth network.  
 d) Illustrate the architecture of a wireless networks.  
 e) Draw IOT protocol stack and discuss function of each layer in short.
- Q2** a) Explain Hidden and exposed node problem with neat diagrams. Explain how to alleviate these problems. [10]  
 b) Explain Bluetooth connection establishment states with neat flow diagram. [10]
- Q3** a) State the characteristics of wireless Adhoc networks and wireless sensor networks separately. Write five points of comparison between them. [10]  
 b) Describe architecture of IoT with any one example. Explain M2M communication. [10]
- Q4** a) Explain the WMAN architecture with a neat diagram. Also state the characteristics and benefits of WMAN. [10]  
 b) What are the factors influencing design of Wireless Sensor Network. Describe the components of a sensor node. [10]
- Q5** a) Explain 6LoWPAN Architecture with a neat diagram. State function of each layer. [10]  
 b) Calculate the uplink cell load factor and number of voice users for a WCDMA system using the following data. What is the pole capacity of the cell. Given: Information rate ( $R_i$ ) 12.2 kbps, Chip rate ( $R_c$ ) 3.84 Mcps, Required  $E_b/N_t$  4 dB, Required interference margin 3 dB, Interference factor due to other cells 0.5, Channel activity factor 0.65. [10]
- Q6** Write a short note on (Solve any 2) [20]  
 a) Vehicular Adhoc Networks.  
 b) Wireless Body Area Networks.  
 c) IEEE 802.11