

Duration: 3hrs

[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

- a State the characteristics of WBAN **5**
- b Compare WLAN, WPAN, WWAN w.r.t. coverage and devices **5**
- c Compare Zigbee and 6LoWPAN **5**
- d List the applications of IoT and state any two constraints in IoT **5**
- e State and explain WSN characteristics **5**

- Q2**
- a Draw network connection establishment flow in Bluetooth and explain, hold and sniff mode in detail **10**
 - b Explain Hidden Node and Exposed Node problem in wireless LANs with neat diagrams **10**

- Q3**
- a Differentiate between ADHOC Networks and Cellular Networks **10**
 - b Compare WiFi and WiMax **10**

- Q4**
- a Explain the Vehicular Network Architecture with neat diagram **10**
 - b Compare SPIN and LEACH routing Protocol **10**

- Q5**
- a Explain the three phases in Wireless Network Planning Process. **10**

Calculate the uplink cell load factor and number of voice users for a WCDMA system using following data

Information Rate $R_p = 12.2$ Kbps

Chip Rate = 3.84 Mcps

required $E_b/N_t = 4$ dB

Required inference margin = 3dB

Inference factor due to other cell = 0.5

Channel activity factor = 0.65

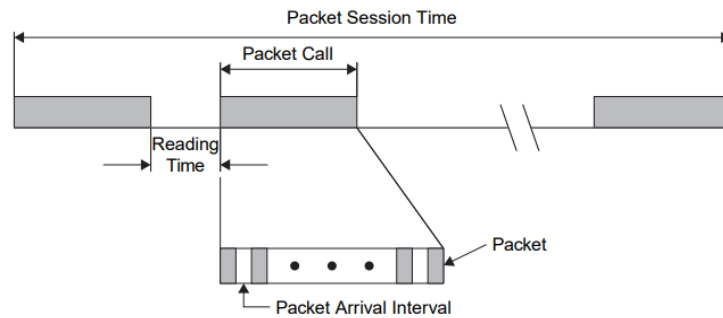
b Explain Downlink budget for GSM.

10

In a GSM system

- Number of packet calls per session (NPCS): 5
- Number of packets within a packet call(NPP): 25
- Number of bytes per packet : 480 bytes
- Time interval between two packets inside a packet call: 0.01 sec
- Data rate per subscriber id is : 48 Kbps
- Reading time Between packet calls: 120 sec

Determine packet transmission time and Packet session time.



Q6 Write a short note on (Solve any 2)

20

- a Wireless Sensor Networks
- b Internet of Things
- c 6LOWPAN
