22533

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. **Attempt any FIVE of the following:**   10

a) Draw block diagram of mobile phone unit.

b) Define :

i)   Mobile station

ii) Control channel

c) Explain the term :

Frequency reuse distance

d) State any four features of UMTS/wide-CDMA

e) State frequency spectrum requirement for 3G and 4G technologies.

f) Draw PAN using bluetooth.

g) State four applications of MANET.

Marks

2. Attempt any THREE of the following: **12**

  a) Describe working of frequency synthesizer section of mobile phone unit.

  b) Draw block diagram of basic cellular system. Explain.

  c) Explain various services offered by GSM.

  d) Compare 3G-W-CDMA with CDMA 2000 with respect to following points -

    i) Backward compatibility

    ii) Carrier spacing

    iii) Chip rate

    iv) Multiple access

3. Attempt any THREE of the following: **12**

  a) i) Define the following terms -

    (1) Cluster

    (2) Reuse factor

    ii) Draw frequency reuse pattern for cluster size four.

  b) State vision of IMT-2000 global standard for 3G.
(any four points)

  c) Describe IEEE 802.15.1 protocol standard for wireless communication networks.

  d) Compare 3G and 4G wireless system with respect to following points.

    i) frequency band used

    ii) Data Rate

    iii) Access technique

    iv) Switching technique

Marks

4. Attempt any THREE of the following: 12

    a) Draw SS-7 protocol architecture. (upto three layers only.) State any two features of SS7.

    b) State any four feature of 4G LTE.

    c) Describe authentication process in 2G-GSM standard.

    d) Describe various layers of IEEE 802.16 standard protocol.

    e) Explain various services offered by SS7 system.

5. Attempt any TWO of the following: 12

    a) Describe wireless local loop (WLL) technology and state its two advantages over wired technology.

    b) Illustrate with neat sketch the concept of proper and improper hand-off in cellular system.

    c) Draw neat IS-95 architecture and explain function of each block.

Marks

6. **Attempt any TWO of the following:** 12

    a) i) Identify A, B, C and complete the given block diagram shown in Fig. No. 1. Explain function of identified blocks A, B and C.

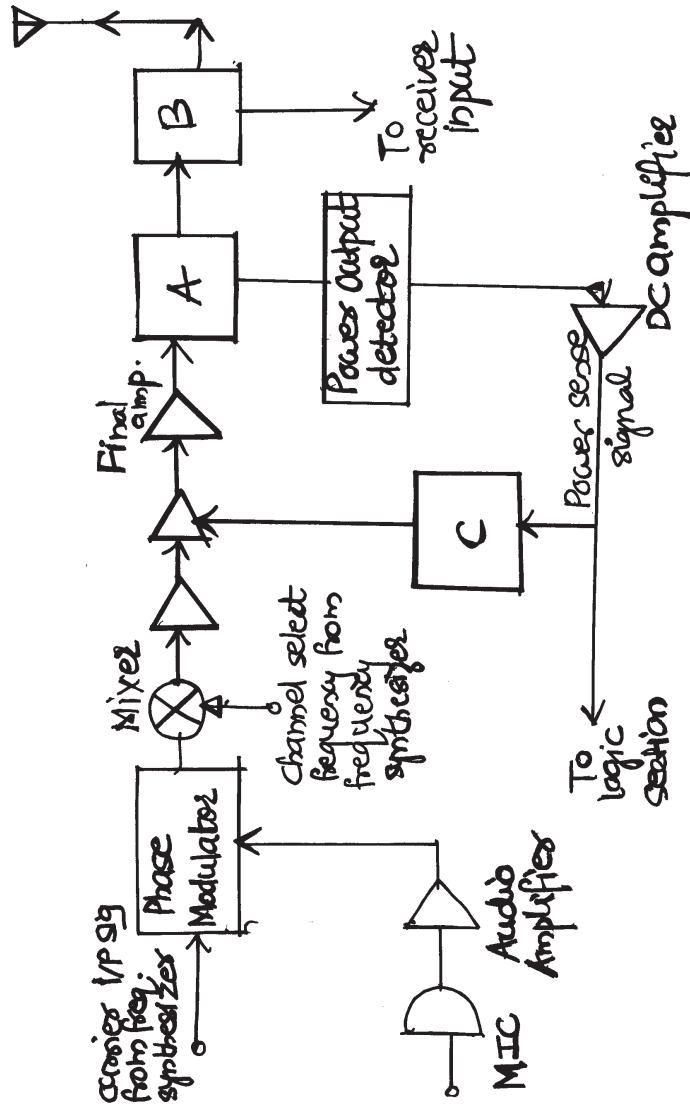**Fig. No. 1**

    ii) List any two types of sensors used in mobile phone unit and state their function. (Refer Fig. No. 1)

    b) Draw the architecture of UMTS. State the function of various blocks of UTMS.

    c) Explain concept of RFID. State frequency band of RFID. Explain classification of RFID tags.