

17657

11920

3 Hours / 100 Marks

Seat No.

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- 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. a) Attempt any THREE of the following: 12
- (i) Define frequency reuse. Draw frequency reuse pattern for cluster size $N = 12$.
- (ii) List any four specification of GPRS 2.5G GSM standard.
- (iii) Compare EDGE for 2.5G GSM with IS-95B 2.5G CDMA (Any four points)
- (iv) Illustrate the operation of paging with neat block diagram.
- b) Attempt any ONE of the following: 6
- (i) Draw the architecture of GSM and state the functions of BTS and BSC.
- (ii) Describe the process of call initiation from mobile handset to the landline unit (PSTN) with neat timing diagram.

P.T.O.

- 2. Attempt any FOUR of the following:** **16**
- a) Describe the effect of co-channel interference in cellular system. How it affects the system capacity?
 - b) Compare 3G-TD-SCDMA with 3G-CDMA-2000 in terms of
 - (i) Data rates
 - (ii) Bandwidth
 - (iii) Spectrum utilization
 - (iv) Antenna
 - c) State any four features of VMTS. (W-CDMA)
 - d) Compare GPRS standard with IS-95B standards w.r.t.
 - (i) Data rate
 - (ii) Number of voice channels
 - (iii) Channel Bandwidth
 - (iv) Backward compatibility
 - e) State any four features of bluetooth.
 - f) Compare between Hard handoff and soft handoff.
(Any four points)
- 3. Attempt any FOUR of the following:** **16**
- a) Draw block diagram of frequency synthesizer and explain its working.
 - b) Compare GSM system with IS-95 standard w.r.t.
 - (i) Data rates
 - (ii) Handoff used
 - (iii) Channel Bandwidth
 - (iv) Modulation used
 - c) Describe the concept of cell splitting using suitable diagram.
 - d) Illustrate operation of WLL with suitable diagram.
 - e) State various services offered by SS7.

4. a) **Attempt any THREE of the following:** **12**
- (i) List the features of IMT-2000 (Any four)
 - (ii) Explain Authentication process in GSM with suitable diagram.
 - (iii) List features of HSCSD 2.5G w.r.t.
 - (1) Channel Bandwidth
 - (2) Duplexing method
 - (3) Data rates
 - (4) Backward compability
 - (iv) State any two advantages and disadvantages of sectoring in cellular system.
- b) **Attempt any ONE of the following:** **6**
- (i) Define handoff. List the types of handoff used in cellular system. Explain two level handoff with suitable diagram.
 - (ii) Explain the working of different levels of SS7 protocol architecture with neat sketch.
5. **Attempt any FOUR of the following:** **16**
- a) Draw the block diagram of transmitter unit of mobile handset and state its functions.
 - b) Compare GSM standard with N-AMPS standard w.r.t. following points
 - (i) Channel Bandwidth
 - (ii) Frequency Band used
 - (iii) Type of modulation
 - (iv) Multiple access method
 - c) Draw the block diagram of forward CDMA channel modulation process and explain it in detail.
 - d) Describe the operation of Local Multipoint Distribution Service (LMDS) with suitable diagram.
 - e) Explain mobile Ad-hoc network (MANET) with suitable diagram.
 - f) State any four advantages of microcell zone concept.

6. Attempt any FOUR of the following:

16

- a) Identify the given block diagram and name the blocks A, B, C and D. State the functions of identified blocks. (Refer Fig. No. 1)

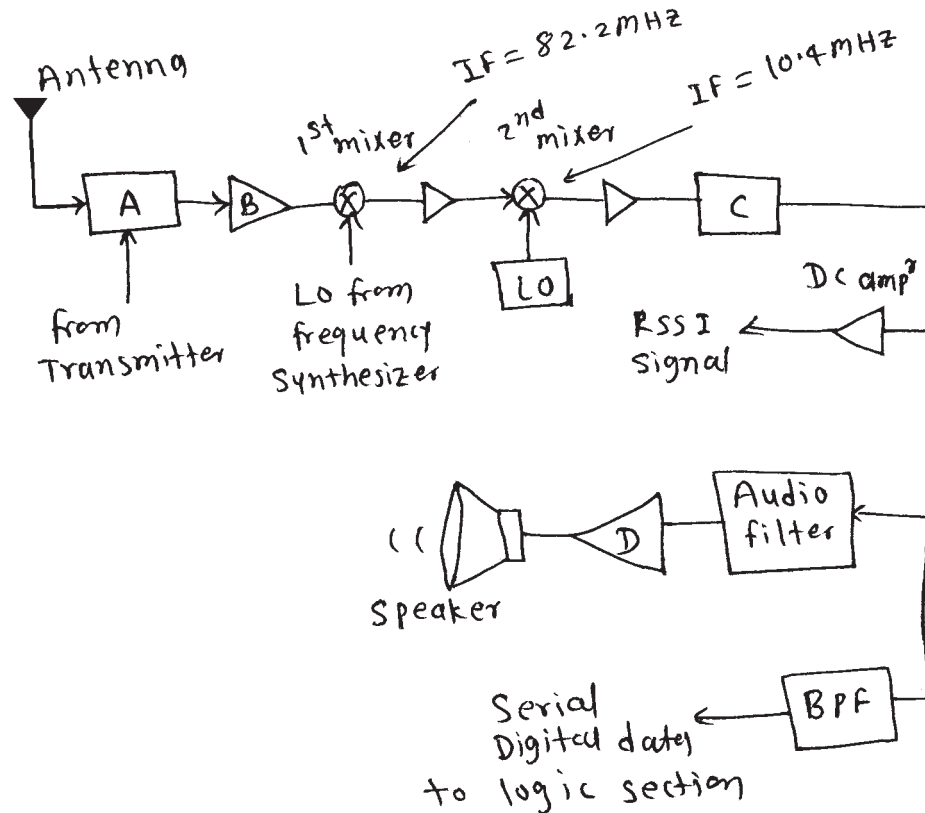


Fig. No. 1

- b) List various key features of IS-95 CDMA system.
- c) Illustrate operation of wireless LAN in Ad-hoc mode with neat and labelled diagram.
- d) Draw the block diagram and explain the operation of control unit used in mobile.
- e) Draw system architecture of IS-95. Explain working of mobile switching center (MSC) and Home location register (HLR) in it.