17657

21819

3 Hours / 100 Marks Seat No. | | | | | | | | |

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

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

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

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

Marks

1. a) **Attempt any <u>THREE</u> of the following:** **12**

(i) Define the following terms with respect to mobile communication:

1) Base station

2) Mobile switching centre

3) Forward channel

4) Control channel

(ii) List out the following specification for GPRS standard:

1) Channel bandwidth

2) Modulation technique

3) Data rate

4) Backward compatibility

(iii) Draw the block diagram of logic unit in mobile handset and explain it.

(iv) Describe the concept of "frequency reuse" used in cellular system. Define cluster. Draw frequency reuse pattern for cluster size 7.

Marks

b) **Attempt any ONE of the following:** **6**

(i) Illustrate with the help of neat timing diagram, the process of cell initiation from mobile handset to a landline phone (PSTN)

(ii) Compare IS 95 standard with GSM standard with respect to the following points:

1) Frequency band

2) Multiple access

3) Modulation technique

4) Channel bandwidth

5) No of voice channel

6) SMS length.

2. Attempt any FOUR of the following: **16**

a) State four features of Bluetooth.

b) Illustrate the operation of Radio paging system and state its drawback.

c) Define the term adjacent channel interference. State methods to reduce it.

d) State the various services offered by GSM standard. Describe these services in detail.

e) List the following specifications of IS 136 standard:

(i) Frequency spectrum

(ii) Channel bandwidth

(iii) Data Rate

(iv) Modulation technique

f) List various 3G standards and state any four features of third generation (3G) standard systems.

Marks

3. Attempt any FOUR of the following: **16**

a) State the vision of IMT 2000 (any four points).

b) List the following parameters of 3G TD SCDMA system:

(i) Data rate

(ii) Bandwidth

(iii) Multiple access

(iv) Backward compatibility.

c) Draw the labeled diagram of frequency synthesizer? How many signals are obtained from frequency synthesizer? Why their frequency should be different?

d) Draw GSM system architecture and explain function of HLR and OMC units.

e) State and explain various services of SS7.

4. a) Attempt any THREE of the following: **12**

(i) List down the features of HSCSD 2.5 G with respect to:

1) Channel Bandwidth

2) Duplexing method

3) Data rate

4) Backward compatibility.

(ii) State any four features of OMTS.

(iii) Draw forward channel structure of IS-95. Write function of each channel type.

(iv) Compare GSM standard with N-AMPS standard with respect to.

1) Generation

2) Channel bandwidth

3) Analog/Digital

4) Data rate.

Marks

b) **Attempt any ONE of the following:** **6**

(i) State different techniques used in cellular system to improve coverage and capacity of cellular system. Describe any one in detail with diagram. State how it increases system capacity.

(ii) What is meant by Hand-off? List different types of Hand-off. Explain any three in detail.

5. Attempt any FOUR of the following: **16**

a) Draw neat block diagram of wireless local loop (WLL) network and state its importance.

b) List and describe any four key features of IS-95 CDMA system.

c) Draw neat block diagram of transmitter unit of mobile handset. State function of APC loop and duplexer unit.

d) Describe the concept of Ad-hoc mobile communication for 4G.

e) Draw basic cellular system. State the advantages of cellular system and define frequency reuse ratio.

f) Explain authestication process in GSM system with the help of neat figure.

6. Attempt any FOUR of the following: **16**

a) Describe the process of mobile terminated call (Incoming call) in GSM with neat call flow sequence diagram.

b) State importance of the following terms:

(i) Blockage

(ii) Call drops

(iii) Word error rate

(iv) Voice quality.

c) Draw SS7 protocol architecture and explain working of different levels of SS7.

d) State any four features of 4G CDMA 2000.

e) Define the term co-channel interference. State cause and effect of co-channel interference on system capacity.