22533

21222

3 Hours / 70 Marks Seat No. | | | | | | | | |

15 minutes extra for each hour

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) Assume suitable data, if necessary.

(6) 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) State any four features of UMTS.

b) Define following components :

i) Forward channel

ii) Base station

c) List out any four features of IS-95-CDMA system.

d) State vision of IMT 200 (any four)

e) Give classification of RFID tags.

f) List any four features of 4G and 4G LTE.

g) State any four applications of Bluetooth.

Marks

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

a) Compare GSM with N-Amps std w.r. to following points:

i) Generation

ii) Channel B.W.

iii) Whether analog or digital

iv) Data rate

v) Frequency band

b) Describe the concept of Frequency reuse in cellular systems. Define cluster. Draw Frequency reuse pattern for cluster size 7.

c) Describe the function of GSM and control channels / signaling channels.

d) List any four features of third generation (3G) cellular standard. State various 3G standards (TDMA and CDMA based).

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

a) Describe working of frequency synthesizer used in mobile handset with diagram.

b) Illustrate with the help of neat figure proper and improper hand-off procedure.

c) Explain authentication process in GSM with suitable diagram.

d) List any four features of MANET.

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

a) State examples of wireless comm^{n} systems and explain cordless telephone system with block diagram.

b) State capacity improvement methods for cellular system and their limitations (Any two methods)

c) Draw SS7 protocol architecture with labelled diagram and state services offered by SS7 system.

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

e) State any four features of Bluetooth and PAN.

Marks

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

a) Draw block diagram of cellular transmitter and write the function of each block.

b) Describe the effect of co-channel interference in cellular systems. How it affects system capacity? Suggest the method to minimize it.

c) Compare 3G WCDMA (UMTS) and 3G CDMA 2000 with respect to carrier spacing, chip rate, power control, frequency, coding and spreading technique.

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

a) Compare IS-95 system with GSM with respect to following points (any six points)

i) Frequency spectrum

ii) Multiple-Access

iii) Channel bandwidth

iv) SMS length

v) Type of hand-off

vi) Type of modulation

vii) No. of voice channels.

b) Describe with relevant sketch the architecture of UMTS network.

c) Describe with relevant sketch IEEE 802.11 protocol standard for wireless communication networks.

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