



**MAULANA ABUL KALAM AZAD UNIVERSITY OF
TECHNOLOGY, WEST BENGAL**

Paper Code : EC-701

WIRELESS COMMUNICATION & NETWORK

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own
words as far as practicable.*

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any ten of the
following : $10 \times 1 = 10$

i) Cordless telephone standard is

- a) PDC b) GSM
c) WLAN ☒ d) DECT.

ii) If the bandwidth of the transmitted signal is larger
than the channel coherence bandwidth, then the
signal could be severely influenced by

- ☒ a) Frequency selective fading
b) Flat fading
c) Fast fading
d) Slow fading.

iii) In GPRS, a user is able to achieve a data rate of

- a) 171.1 kbps b) 171.2 kbps
c) 171.3 kbps d) 171.4 kbps.

iv) When the mobile phone communicates with two
sectors of one cell and one sector of another cell,
the hand-off is called

- ☒ a) Soft softer hand-off
b) Hard hand-off
c) Softer hand-off
d) Soft hand-off.

v) The most critical feature of TDMA operation is

- a) Dividing the carrier channel bandwidth into
time slots
b) Assignment of time slots among multiple
subscribers
☒ c) Time synchronization to the incoming TDMA
frame
d) Providing different access to subscribers.

(vi) Which logical channel in GSM handles hand-off?

- a) RACH b) FACCH
c) SDCCH d) FCCH.

vii) CDMA is applied on

- a) IP layer b) MAC layer
c) Network layer d) Session layer.

viii) The interface that connects Node B and RNC in UMTS is

- a) U_c interface b) I_{ub} interface
c) G_n interface d) G_b interface.

(x) Bluetooth is

- a) Wireless LAN
b) WAN

- c) Short range infrared ad-hoc
d) Short range wireless ad-hoc LAN service.

x) In IEEE 802.11, a BSS without an AP is called

- a) Ad-hoc architecture
b) Infrastructure architecture
c) Either (a) or (b)

d) Neither (a) nor (b).

xi) The WiMAX PHY layer is based on

- a) FDM b) TDM
c) CDMA d) OFDM.

xii) Mobile IP refers to

- a) Mobility b) IP tuning
c) IP within IP d) All of these.

xiii) IPv4 uses

- a) 4 bit address b) 8 bit address
c) 32 bit address d) 64 bit address.

GROUP - B**(Short Answer Type Questions)**Answer any *three* of the following. $3 \times 5 = 15$

2. What is cell splitting ? Write down its advantages. $2 + 3$
3. Explain the principle of TDMA. Compare TDMA with FDMA. $2 + 3$
4. Define hand-off. Differentiate between Hard hand-off and Soft hand-off. $2 + 3$
5. What is mobile internet protocol ? Explain IP class and addressing. $1 + 4$
6. What do you mean by IEEE 802.11 standard ? Discuss its features. $2 + 3$

GROUP - C**(Long Answer Type Questions)**Answer any *three* of the following. $3 \times 15 = 45$

7. a) Discuss the concept of 'Cell cluster' and 'Frequency Reuse' in cellular communication.
- b) What do you mean by co-channel cell ? Determine the distance from a nearest co-channel cell for a cell having radius of 0.64 km and a reuse factor 12.
- c) Discuss fixed and dynamic channel assignment schemes in cellular communication. $5 + 5 + 5$

8. a) What do you mean by spread spectrum ? Write down its advantages.
- b) Discuss direct sequence spread spectrum (DSSS) in detail. Compare DSSS with FHSS (frequency hopping spread spectrum).
- c) Draw and explain GSM architecture. Discuss different channels used in GSM communication.

 $5 + 5 + 5$

9. a) Describe different mechanisms of multipath propagation.
- b) Define fading. Discuss the concept of slow and fast fading.
- c) What is cell sectorization ? Write down its advantages. $5 + 5 + 5$
10. a) Discuss the concept of CDMA. Mention its differences with FDMA.
- b) What is 'Near and Far' problem in CDMA system ?
- c) Discuss briefly the advantages and disadvantages of WLAN. $5 + 5 + 5$

11. Write short notes on any *three* of the following : 3×5

- a) 4G over 3G networks
 - b) Forward and reverse link in CDMA based IS-95 systems
 - c) UMTS
 - d) CSMA-CD
 - e) GPRS.
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