Chapter 6

Q1/ List the advantages and disadvantages of Frequency Multiplex?

Advantages:
-no dynamic coordination necessary
-works also for analog signals
Disadvantages:
-waste of bandwidth if the traffic is distributed unevenly
-inflexible
-guard spaces

Q2/ List the advantages and disadvantages of Time Multiplex?

Advantages:
-only one carrier in themedium at any time
-throughput high even for many users
Disadvantages:
-precise synchronization necessary

Q3/ List the advantages and disadvantages of Combination of both Time and Frequency Multiplex?

Advantages:
-better protection against tapping
-protection against frequency selective interference
-higher data rates compared tocode multiplex
Disadvantages:
-precise coordination required

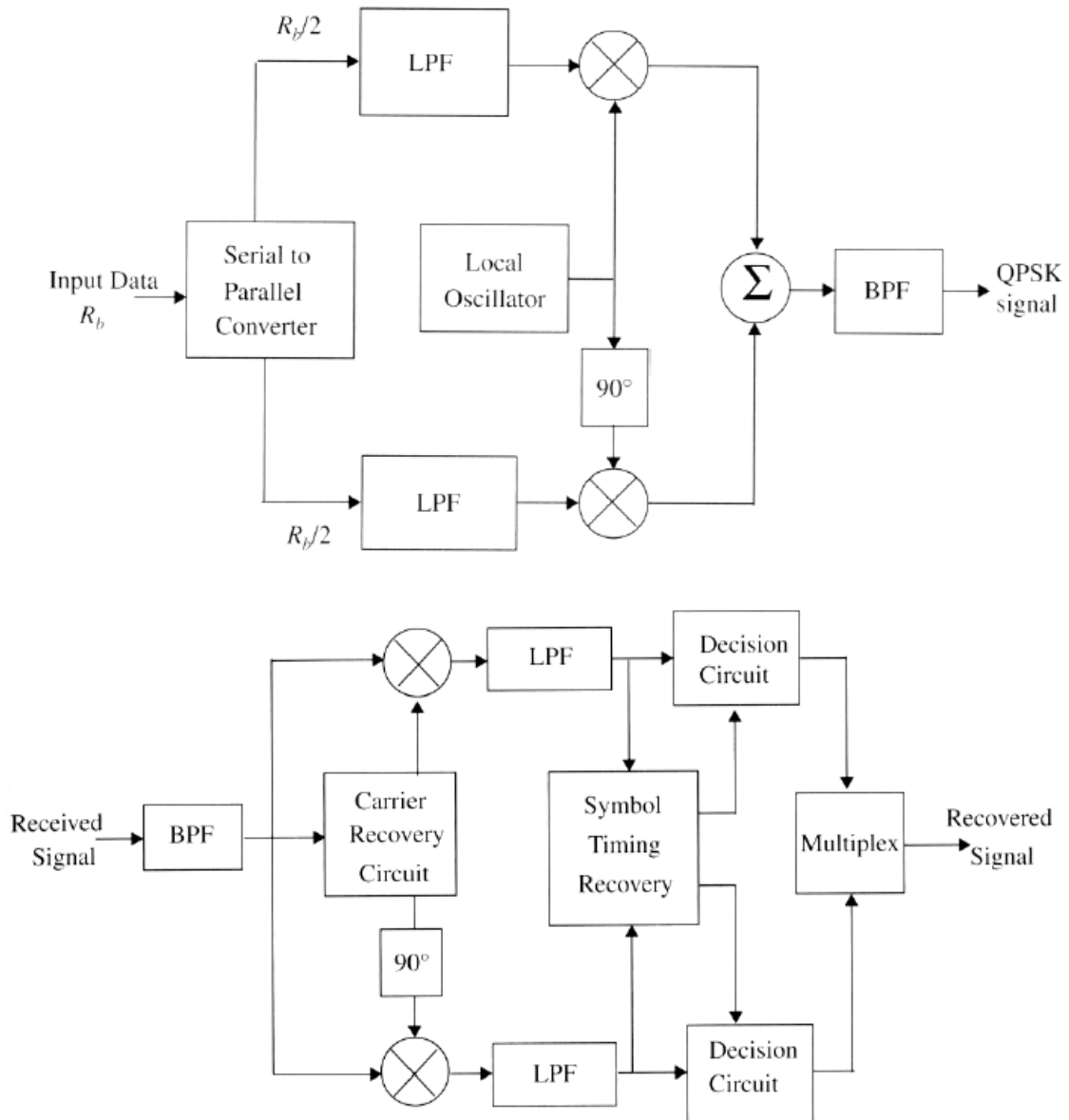**Q4/ List the advantages and disadvantages of Code Multiplex?**

Advantages:
-bandwidth efficient
-no coordination and synchronization necessary
-good protection against interference and tapping
Disadvantages:
-lower user data rates
-more complex signal regeneration

Q5/ Draw the block Diagram of QPSK transmitter and receiver.

Q6/ Define CDMA then list its advantages and disadvantages?

CDMA: unique digital codes are used to differentiate subscribers, these codes are shared by both MS and BS so that all users share the same range of radio spectrum.

Advantages:

1)Capacity increases: 4 to 5 times (GSM)
2)Improved call quality
3)Simplified system planning
4)Enhanced privacy

5)Improved coverage characteristics
6)Increased talk time for portables
7)Bandwidth on demand

Disadvantages:

-Receiver must be synchronized with the transmitter to apply decoding correctly

-Receiver must know the code and must separate the channel with user data from the background noise

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Q7/ Define GPRS and list its benefits?

GPRS: General Packet Radio Service (GPRS) is a new bearer service for GSM that greatly improves and simplifies wireless access to packet data networks

Benefits of GPRS
-New Data Services
-High Speed (Data Rate 14.4 –115 kbps)
-Efficient use of radio bandwith(Statistical Multiplexing)
-Circuit switching & Packet Switching can be used in parallel
-Constant connectivity

Q9/ Compare between WiFi& WiMAX?

	Wifi	WiMAX
	IEEE 802.11	IEEE 802.16a
Max Speed	54Mbps (a&g)	10-100Mbps
Range	100m	40 km
Coverage	Indoor	Outdoor
Users	Hundred	Thousand
Service Level	None	Yes

Q10/ Compare between Bluetooth vs. WiFi according to the following :

	Bluetooth	**Wifi**
Specifications authority	Bluetooth SIG	IEEE, WECA
Year of development	1994	1991
Bandwidth	Low (800 Kbps)	High (11 Mbps)
Cost	Low	High
Power Consumption	Low	High
Frequency	2.4 GHz	2.4 GHz
Security	It is less secure	It is more secure
Range	10 meters	100 meters
Ease of Use	Fairly simple to use. Can be used to connect upto seven devices at a time. It is easy to switch between devices or find and connect to any device.	It is more complex and requires configuration of hardware and software.

Q11/ Compare between Bluetooth vs. ZigBee?

	Bluetooth (v1)	ZigBee
Protocol Stack	250 kb	< 32 kb (4kb)
Range	10 - 100 meters	30 - 100 meters
Link Rate	1 Mbps	250 kbps
Battery	rechargeable	non-rechargeable
Devices	8	2^16
Air Interface	FHSS	DSSS
Usage	frequently	infrequently
Network Join Time	long	short
Extendibility	no	yes
Security	PIN, 64 bit, 128 Bit	128 bit, AES

Q12/ Give the features of Bluetooth ?

Protocol Stack → 250 kb
Range → 10 -100 meters
Link Rate → 1 Mbps
Battery → rechargeable
Devices → 8
Air Interface → FHSS
Usage → frequently
Network Join Time→ long
Extendibility → no
Security → PIN, 64 bit, 128 Bit

Q13/ Give the features of Zigbee ?

Protocol Stack → < 32 kb (4kb)
Range → 30 -100 meters
Link Rate → 250 kbps
Battery → non-rechargeable
Devices → 2^16
Air Interface → DSSS
Usage → infrequently
Network Join Time→ short
Extendibility → yes
Security → 128 bit, AES