SECTION A (MCQ) **2 Marks each.**
A1. (c)
A2. (a)
A3. (c)
A4. (a)
A5. (c)
A6. (d)
A7. (d)
A8. (c)
A9. (a)
A10. (b)

B1.

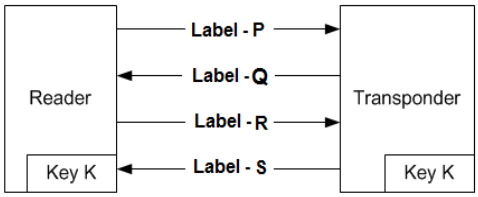


Figure B1

Serial No.	Description
1	Token 1
2	Token 2
3	GET_CHALLENGE
4	Random Number R_A
5	Random Number R_B
6	Key K

Table B1

(a) Label – P: GET_CHALLENGE
Label – Q: Random Number R_A
Label – R: Token 1
Label – S: Token 2

(b)
Authentication using Derived Keys

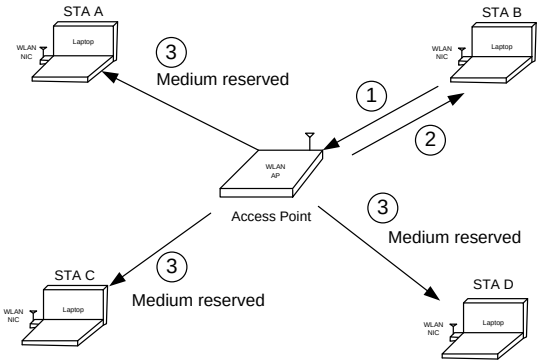
(c) UHF

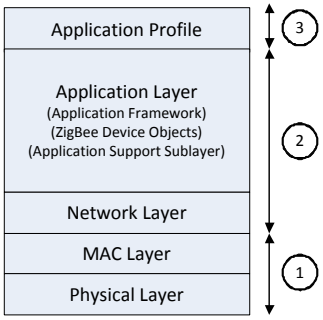
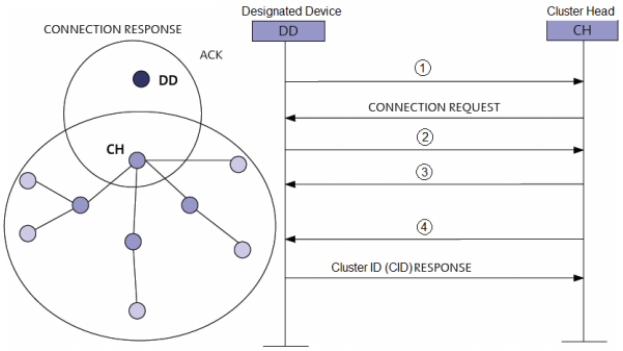
(d)
< 3m

(e)
One of the following
Pallet tracking, electric toll collection, baggage handling (US), Item-level tracking

(f)
The Modified Miller is suitable to be used for data transmission from the reader to the tag.

The reason is that it is possible to ensure a continuous power supply to the transponder from the HF field of the reader even during data transfer

B2.	
	(a) UHF
	(b) 13 channels
	(c) 1 or 6 or 11
	(d) Assess Point
	(e) Infrastructure mode
	(f) BPSK, QPSK, 16QAM, 64 QAM (Any one)
	(g) CSMA with RTS/CTS or Virtual Sense mechanism
	(h) RTS Frame and CTS frame
	(i) IEEE 802.11b

B3.	 **Figure B3.1**  **Figure B3.2**
	(a) Physical Layer
	(b) MAC Layer
	(c) 250 kbps and OQPSK
	(d) Network Layer
	(e) RFD or Reduced Function Device
	(f) Coordinator ➔ Device CH
	(g) The packet ① ➔ Hello
	(h) The packet ② ➔ Connection response
	(i) Cluster Tree Network

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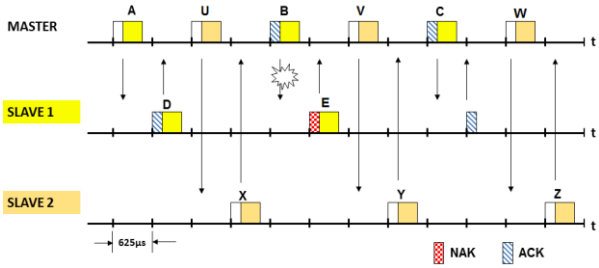
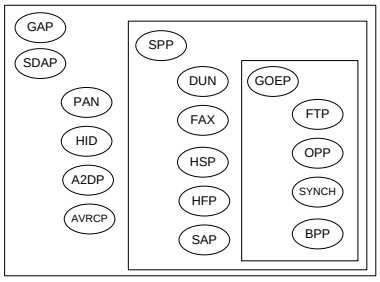
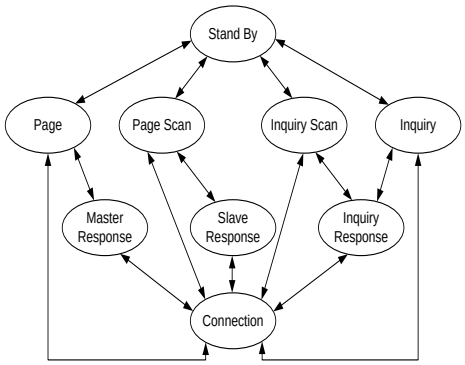
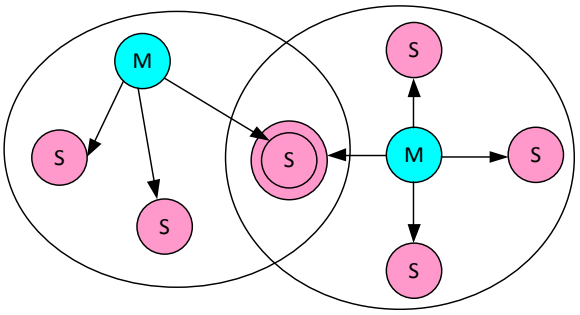
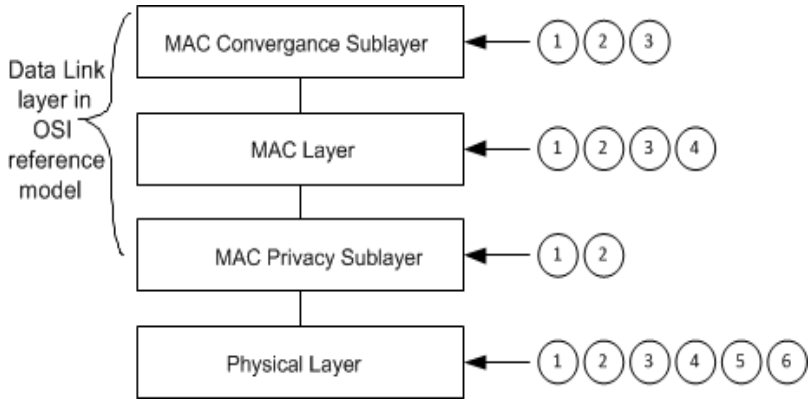
B4.	 **Figure B4.1**  Relationship among Bluetooth Profiles **Figure B4.2**
	(a) 1-slot packet
	(b) Even time slot
	(c) Piconet
	(d) Seven
	(e) Any one: SCO, eSCO or Voice
	(f) GAP and SDAP
	(g) GAP. SDAP, SPP. HFP
	(h) SYNC
	(i) Transferring of images or files from one Bluetooth device to another Bluetooth device.

B5.	 **Figure B5.1**  **Figure B5.2**
	(a) - Inquiry - Paging - Connection
	(b) Stand By
	(c) Inquiry
	(d) Inquiry Response
	(e) Any one, Standby, Hold, Sniff, Park
	(f) Scatternet
	(e) No, this is because the two piconets are actually one piconet since there must be one and only one master in each piconet

B6.



(a) Any two of the following

OFDM, Ranging, Power Control, Dynamic Frequency Selection, Transmit and Receive, Smart Antenna System, Flexible Channel Bandwidth, Adaptive Bust Profile, Adaptive modulation, TDD and FDD duplexing, Space time coding

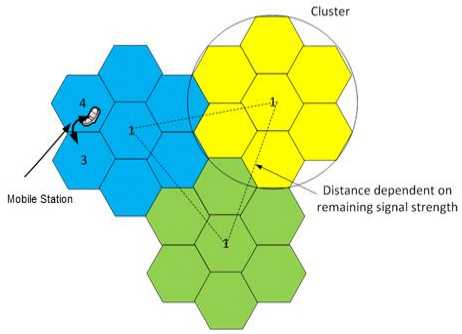
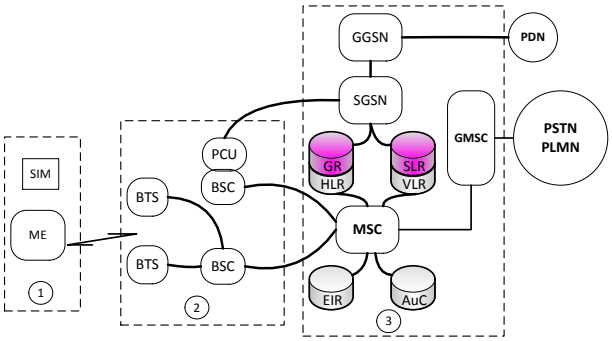
(b) Any two of the following

Packing, Fragmentation, ARQ, QoS

(c) MAC privacy layer

(d)

		WiMAX	WLAN
(i)	IEEE standard	IEEE 802. **16e** (Mobile Applications)	IEEE 802. a/g (up to 54 Mbps)
(ii)	Bandwidth	20/22 MHz	1.75,3.5, 5, 7, 10 or 20 MHz (Any one of the bandwidth supported)
(iii)	Spectrum	2.4/5.2/5.8 GHz (Any one of the ISM Unlicensed bands)	2.4/5.2/5/8 GHz (Any one of the ISM Unlicensed bands)
(iv)	Maximum Range	a few hundred (in meters)	40 (in kilometre)
(v)	Bit rate (maximum)	**54** Mbps for IEEE 802.11a/g	**100** Mbps

B7.	 **Figure B7.1**  **Figure B7.2**
	(a) 7
	(b) handover
	(c) Less co-channel interference (co-channel cells have larger distance in between)
	(d) Network Switching Subsystem (NSS)
	(e) Mobile Switching Centre is responsible for interconnecting mobile users to other mobile and fixed network users
	(f) management of the radio resources and handover
	(g) Base Transceiver Station manages the interface between the GSM network and a few mobile stations through the air interface.
	(h) to separate the voice information and data information received from the Radio Subsystem
	(i) TDMA/FDMA
	(j) The BSCs in 2.5G do not communicate with one another. The RNCs in 3G communicates with one another.

B8.	 **Figure B8**
	(a) Bluetooth or Bluetooth Low Energy (BLE)
	(b) WLAN
	(c) should always be done before a vendor provides you with a final proposal
	(d) Any two of the following • How does the **current network** support the organisation's mission? • What are **the strengths and weakness of the current network**? • How **many users** does it support? • **What essential applications** run on the network?
	(e) a timetable that lists specific dates should always be done before a vendor provides you with a final proposal
	(f) External consultants
	(g) The vendor has been selected.
	(h) Any two of the following: Small group sessions, Detailed written instructions, Web-based training, One-on-one sessions