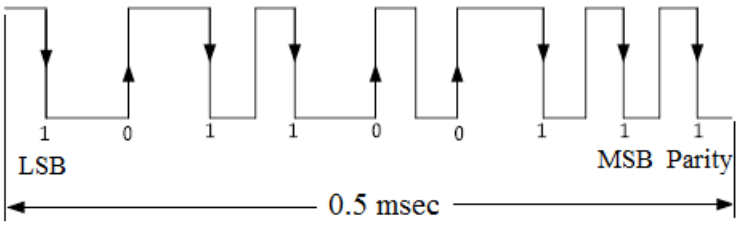
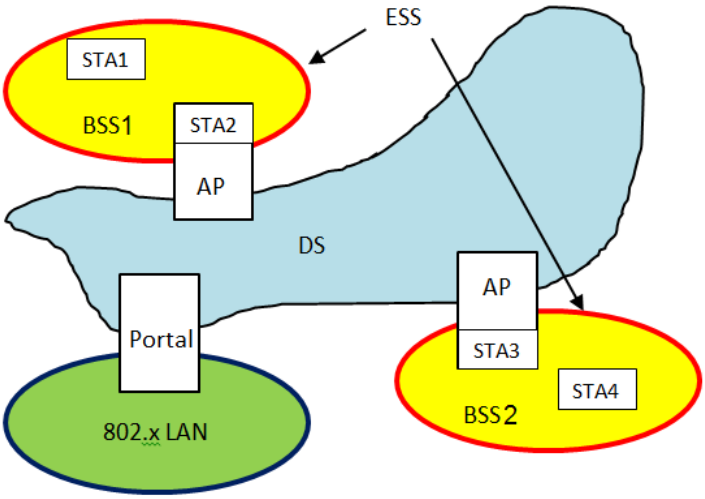
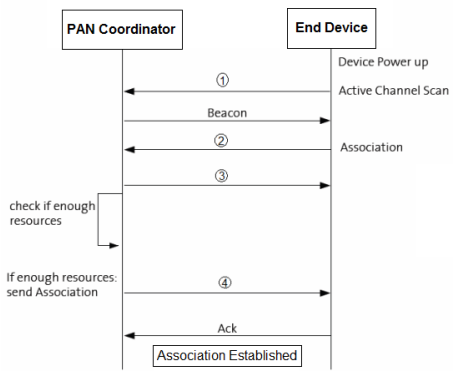
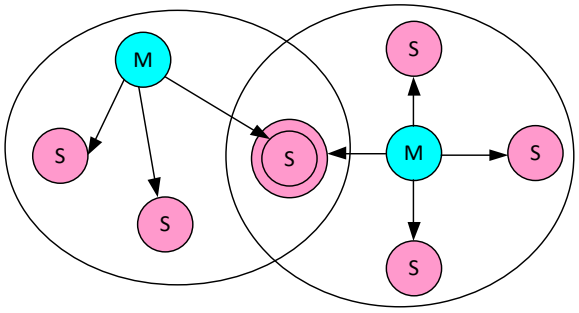
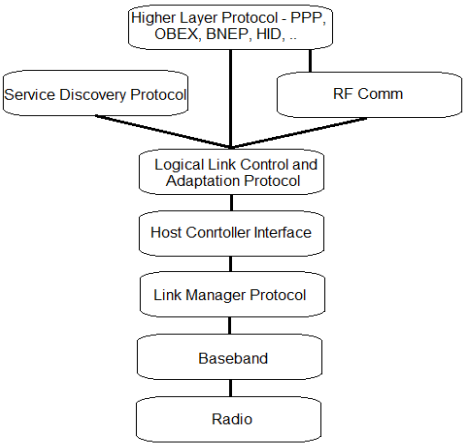
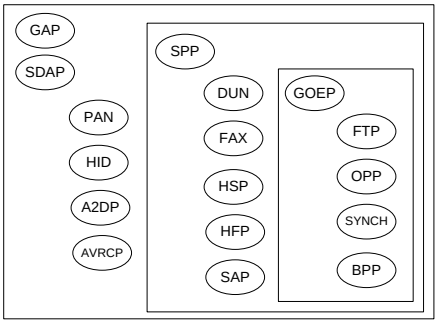
SECTION A (MCQ) **2 Marks each.**
A1. (b)
A2. (a)
A3. (b)
A4. (b)
A5. (d)
A6. (d)
A7. (c)
A8. (a)
A9. (c)
A10. (c)

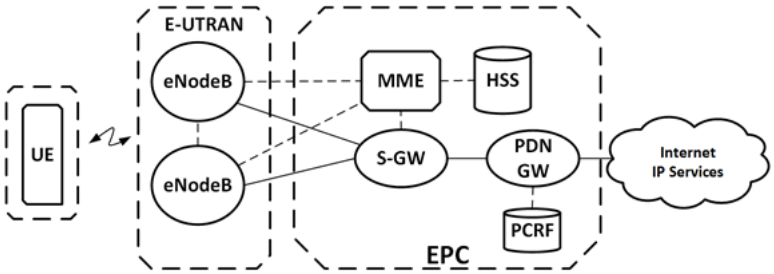
B1.	
	(a) Manchester Coding. Since every bit period has a transition which can be easy to reconstruct the clock at the receiver
	(b) From the diagram, 9 bits takes 5 msec. Therefore, Bit Rate = $\frac{Total\ Number\ of\ bits\ transmitted}{Time\ \ Taken}$ $\frac{9\,bits}{0.5\text{x}10^{-3}} = 18kbps$
	(c) Yes, Since no. of 1 is even, the received data in this RFID system has an error.
	(d) Advantage: Parity can be easily implemented. Disadvantage: Unable to detect multiple bit errors.
	(e) Any two of the following • Writable data • Absence of line of sight • Varity of read ranges • Wide data-capacity range • Support for multiple tags readable • Rugged, Perform smart tasks • Extreme read accuracy.

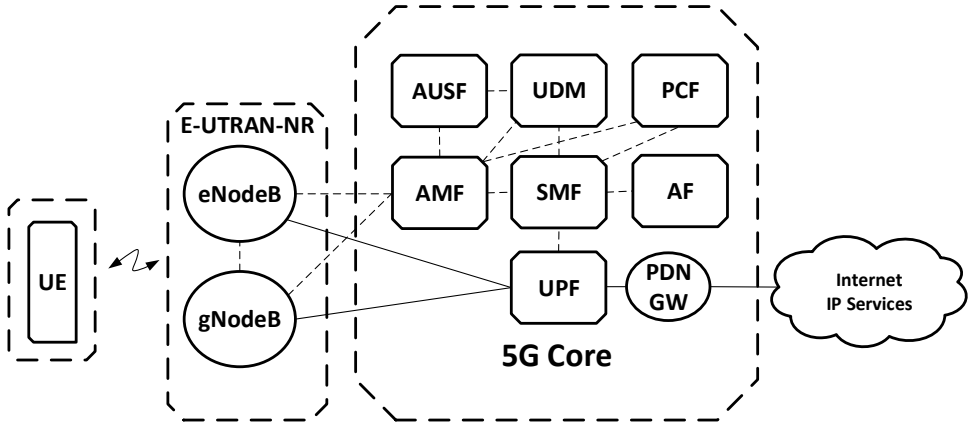
B2.	
	(a) physically disjointed BSSs
	(b) Portal
	(c) DS
	(d) Assess Point
	(e) nine logical services
	(f) Distribution service
	(g) Integration service
	(h) Deassociation service
	(i) Reassociation service
	(j) IEEE 802.11a

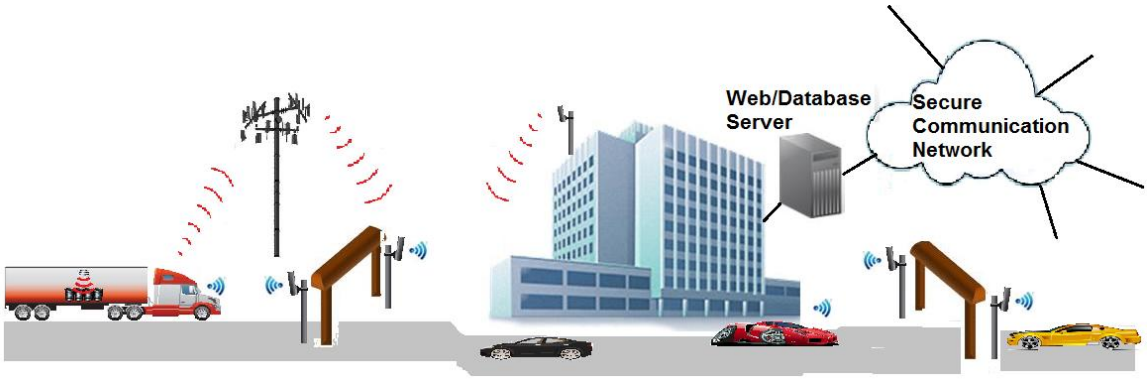
B3.	 
	(a) IEEE 802.15.4
	(b) Cluster Tree Network
	(c) Full Function Device (FFD)
	(d) End Device
	(e) Smart Gateway
	(f) MAC Layer
	(g) The packet ① ➔ Beacon Request
	(h) The packet ② ➔ Association Request
	(i) The packet ③ ➔ ACK
	(j) The packet ④ ➔ Association Response

B4.	 
	(a) IEEE 802.15.1
	(b) 2.4 GHz ISM Band
	(c) Scatternet
	(d) Active
	(e) Yes, since a Bluetooth device can be master for one piconet and slave for another piconet at the same time. It becomes scatter net
	(f) Seven
	(g) Baseband layer
	(h) Logical link control and adaption layer or L2CAP
	(i) Radio communication or RF comm

B5.	 Relationship among Bluetooth Profiles
	(a) Bluetooth is a de facto wireless standard to support various industries
	(b) (i) FTP (ii) HID (iii) A2DP
	(c) (i) GLP (ii) HRP (iii) PXP
	(d) (i) Bluetooth Classic (ii) Bluetooth Classic (iii) Bluetooth Low Energy

B6.	
	(a) OFDMA
	(b) SC-FDMA
	(c) Any one of the following High spectral efficiency; Very low latency; Simplification of radio network
	(d) Any one of the following Simple protocol architecture; Optimization for IP traffic and services; Improvement in latency, capacity, throughput, idle to active transitions
	(e) Any one of the following 1.4, 3, 5, 10, 15, 20 MHz
	(f) Any one of the following QPSK; 16-QAM; 64-QAM
	(g) Any one of the following Scheduling and adaption control to improve latency and throughout of the network; Multi-antenna techniques; Radio-resource management
	(h) Any one of the following Interact with HSS for user authentication, profile download; Responsible for NSA signalling and NAS signalling security
	(i) Any one of the following Act as mobility anchor for the data bearers; Processes all IP packets to/from UE; Buffer the downlink data when UE is in IDLE mode
	(j) Any one of the following Stores current location information (e.g. assigned MME, Serving SGW); Stores one or more subscription profiles containing IMSI, QoS, Services, etc..

B7.	
	(a) Enhanced mobile broadband (eMMB) Massive machine type communication (mMTC) Ultra-reliable and low latency communication (uRLLC)
	(b) Access and Mobility Function (AMF)
	(c) User Plane Function (UPF)
	(d) Session Management Function (SMF)
	(e) Unified Data Management (UDM)
	(f) Authentication Server Function (AUSF)
	(g) Policy Control Function (PCF)
	(h) Application Function (AF)

B8.	
	(a) Any one, • Dedicated Short Range Communications, (DSRC) • 5G
	(b) Minimum downtime of the network is required.
	(c) Collection of information for new wireless infrastructure
	(d) Should always be done before a vendor provides you with a final proposal
	(e) Any one: Company's own technical staff, a potential vendor or a consulting organization
	(f) Any two of the following; • Security features and policies required • Radio signal range (distance requirements) • Number of channels required (based on user/application load) • Throughput required • Growth (expansion) requirements and impact on current design • Potential interference sources and their location, as well as the effect on all of these answers
	(g) Upfront costs and Recurring costs
	(h) a timetable that lists specific dates