MUTHAYAMMAL ENGINEERING COLLEGE

(An Autonomous Institution)

(Approved by AICTE, New Delhi, Accredited by NAAC & Affiliated to Anna University)
Rasipuram - 637 408, Namakkal Dist., Tamil Nadu

MUST KNOW CONCEPTS	MKC
MCA	**2021-2022**

Subject Code/Name : 19CAB17- Mobile Computing

Year/Sem/Sec : II / III / -

S.No	Term	Notation (Symbol)	Concept/Definition/Meaning/Units/Equation /Expression	Units
Unit I: Logic And Proofs Wireless Communication Fundamentals, Architecture				
1	Wireless communication	--	Wireless communication (or just wireless, when the context allows) is the transfer of information between two or more points that do not use an electrical conductor as a medium by which to perform the transfer.	I
2	Frequency spectrum	--	The frequency spectrum of an electrical signal is the distribution of the amplitudes and phases of each frequency component against frequency	I
3	Multiplexing	--	Multiplexing is the technology that is able to combine multiple communication signals together in order for them to traverse an otherwise single signal communication medium simultaneously	I
4	FDM	--	Frequency Division Multiplexing, the frequency dimension spectrum is split into smaller frequency bands.	I
5	TDM	--	The Time Division Multiplexing or (TDM) is a digital or analog technology (in rare cases) that uses time, instead of space or frequency, to separate the different data streams.	I
6	CDM	--	The Code Division Multiplexing or (CDM) allots a unique code to every channel so that each of these channels can use the same spectrum simultaneously at the same time.	I
7	SDM	--	The Space Division Multiplexing or (SDM) is called a combination of Frequency Division Multiplexing (FDM) and Time Division Multiplexing (TDM).	I
8	Spread spectrum	--	Spread Spectrum refers to a system originally developed for military applications, to provide secure communications by spreading the signal over a large frequency band.	I

9	Frequency Hopping	--	Frequency-hopping spread spectrum (FHSS) is a method of transmitting radio signals by rapidly changing the carrier frequency among many distinct frequencies occupying a large spectral band	I
10	Direct sequence	--	In telecommunications, direct-sequence spread spectrum (DSSS) is a spread-spectrum modulation technique primarily used to reduce overall signal interference	I
11	GSM	--	GSM is an open, digital cellular radio network operating in over 200 countries worldwide. It uses narrowband time division multiple access (TDMA) technology.	I
12	Mobile station	--	A mobile station (MS) comprises all user equipment and software needed for communication with a mobile network.	I
13	BSS	--	The base station subsystem (BSS) is the section of a traditional cellular telephone network which is responsible for handling traffic and signaling between a mobile phone and the network switching subsystem	I
14	NSS	--	Network switching subsystem (NSS) (or GSM core network) is the component of a GSM system that carries out call out and mobility management functions for mobile phones roaming on the network of base stations.	I
15	OSS	--	The OSS is the functional entity from which the network operator monitors and controls the system.	I
16	CDMA	--	Code-division multiple access (CDMA) is a channel access method used by various radio communication technologies.	I
17	Call Routing	--	It is a call management feature that queues and distributes inbound calls to a team of agents.	I
18	SIM	--	A SIM card, also known as subscriber identity module or subscriber identification module (SIM), is an integrated circuit running a card operating system (COS)	I
19	Base transceiver station	--	A base transceiver station (BTS) is a fixed radio transceiver in any mobile network. The BTS connects mobile devices to the network.	I
20	Base station control	--	A base station controller (BSC) is a network element that controls and monitors a number of base stations and provides the interface between the cell sites and the mobile switching center (MSC).	I
21	VLR	--	The VLR contains the exact location of all mobile subscribers currently present in the service area of the MSC.	I

22	HLR	--	Home Location Register (HLR) is a database that contains data regarding authorized subscribers using a global system for mobile communication (GSM) core network.	I
23	EIR	--	The Equipment Identity Register (EIR) is a network entity used in GSM networks that stores lists of International Mobile Equipment Identity (IMEI) numbers, which correspond to physical handsets (not subscribers).	I
24	MSC	--	A Mobile Switching Center (MSC) is a core part of the GSM/CDMA network system. It acts as a control center of a Network Switching Subsystem (NSS).	I
25	Mobility management	--	Mobility management is one of the major functions of a GSM or a UMTS network that allows mobile phones to work.	I
Unit II: Mobile Wireless Short Range Networks				
26	Types of wireless N/WS	--	Wireless LAN,Wireless MAN, Wireless PAN, Wireless WAN	II
27	WCAN	--	Typically, a wireless personal area network uses some technology that permits ... of a central server, they can communicate as if connected by a cable.	II
28	WPAN	--	It is a network for interconnecting devices centered around an individual person's workspace - in which the connections are wireless.	II
29	WWAN	--	A WWAN often differs from wireless local area network (WLAN) by using mobile telecommunication cellular network technologies such as 2G, 3G, 4G LTE, and 5G to transfer data.	II
30	Zigbee Topologies	--	Zigbee network topology can be divided into three types. There are star topology, tree topology and peer-to-peer or mesh topology.	II
31	Bluetooth	--	Bluetooth is a open wireless technology standard for exchanging data over short distances from fixed and mobile devices.	II
32	WCAN equipment	--	The Story of CAN Equipment Sales LLC could not be told without the inclusion of CAN-USA Inc.	II
33	AP	--	An access point is a wireless network device that acts as a portal for devices to connect to a local area network.	II
34	IBSS	--	It is an Independent Basic Service Set or ad hoc network is the simplest of all IEEE 802.11 networks in that no network infrastructure is required.	II
35	ESS	--	An extended service set (ESS) is a wireless network, created by multiple access points, which appears to users as a single, seamless network.	II

36	WCAN Topologies modes	--	The study of network topology recognizes eight basic topologies: point-to-point, bus, star, ring or circular, mesh, tree, hybrid, or daisy chain.	II
37	WCAN Technologies	--	A WPAN (wireless personal area network) is a personal area network - a network for interconnecting devices centered around an individual person's workspace	II
38	Infrared	--	Infrared radiation (IR), sometimes referred to simply as infrared, is a region of the electromagnetic radiation spectrum where wavelengths range from about 700 nanometers (nm) to 1 millimeter (mm).	II
39	MAC frames	--	The MAC frames in the MAC sublayer are described as a sequence of fields in specific order.	II
40	Hand Off	--	Handoff refers to a process of transferring an ongoing call or data session from one channel.	II
41	MIB	--	A management information base (MIB) is a database used for managing the entities in a communication network.	II
42	Security tecniques	--	The security of Bluetooth uses the concept of two separate keys, an authentication key and an encryption key.	II
43	Types of authentication	--	Single-Factor/Primary Authentication Two-Factor Authentication (2FA) Single Sign-On (SSO)	II
44	TKIP	--	TKIP (Temporal Key Integrity Protocol) is an encryption protocol included as part of the IEEE 802.11i standard for wireless LANs (WLANs).	II
45	WSP	--	Wireless Session Protocol (WSP) is an open standard for maintaining high level session. Wireless session that starts when the user connects to one URL and ends when the user leaves that URL.	II
46	WDP	--	Wireless Datagram Protocol (WDP) defines the movement of information from receiver to the sender and resembles the User Datagram Protocol in the Internet protocol suite.	II
47	Piconet	--	A piconet is an ad hoc network that links a wireless user group of devices using Bluetooth technology protocols.	II
48	Scatternet	--	A scatternet is a number of interconnected piconets that supports communication between more than 8 devices.	II
49	Authorization	--	Authorization is the process of giving someone permission to do or have something.	II

50	IRDA	--	IrDA(Infrared Data Association) is one type of personal communication area network which is deployed in infrared rays	II
Unit III : Mobile IP Network Layer, Transport Layer				
51	IP	--	Mobile IP is a communication protocol (created by extending Internet Protocol, IP) that allows the users to move from one network to another with the same IP address.	III
52	Requirements for Mobile IP	--	1. Compatibility 2. Transparency 3. Scalabaility & Efficiency 4. Security	III
53	Mobile Node	--	A mobile node (MN) is a node that is capable of changing its point of attachment to the network across layers, namely layer 2 or layer 3. A mobile node may be either a mobile host (with no forwarding functionality) or a mobile router (with forwarding functionality).	III
54	Correspondent Node	--	The packets from the home agent are sent to the foreign agent which delivers it to the mobile node. Correspondent Node (CN): It is a device on the internet communicating to the mobile node.	III
55	Care-of Address	--	A care-of address (usually referred to as CoA) is a temporary IP address for a mobile device used in Internet routing. This allows a home agent to forward messages to the mobile device.	III
56	Foreign Agent	--	A foreign agent is any person or entity actively carrying out the interests of a foreign country while located in another host country, generally outside the protections offered to those working in their official capacity for a diplomatic mission. Foreign agents may be citizens of the host country.	III
57	Tunnel	--	1a : a covered passageway specifically : a horizontal passageway through or under an obstruction. b : a subterranean gallery (as in a mine) c : burrow. 2 : a hollow conduit or recess : tube, well.	III
58	Two types of Mobility Management	--	location management and • call routing.	III
59	Location Management	--	Location management is the process of identifying the physical location of the user so that calls directed to that user can be routed to that location.	III

60	Paging	--	Paging is a function of memory management where a computer will store and retrieve data from a device's secondary storage to the primary storage.	III
61	Encapsulation	--	Encapsulation is one of the fundamentals of OOP (object-oriented programming). It refers to the bundling of data with the methods that operate on that data.	III
62	Types of Encapsulation	--	Member Variable Encapsulation. Function Encapsulation. Class Encapsulation.	III
63	Indirect routing	--	Indirect routing takes place when the destination is not on a directly attached IP network, forcing the sender to forward the datagram to a router for delivery.	III
64	Route Optimization	--	Route optimization is the process of finding the most cost-effective route for a set of stops.	III
65	DHCP	--	Dynamic Host Configuration Protocol (DHCP) is a network management protocol used to dynamically assign an IP address to nay device, or node, on a network so they can communicate using IP (Internet Protocol).	III
66	IP Security	--	The IP security (IPSec) is an Internet Engineering Task Force (IETF) standard suite of protocols between 2 communication points across the IP network that provide data authentication, integrity, and confidentiality. It also defines the encrypted, decrypted and authenticated packets	III
67	TCP	--	Transmission Control Protocol (TCP) is a standard that defines how to establish and maintain a network conversation by which applications can exchange data. TCP works with the Internet Protocol (IP), which defines how computers send packets of data to each other.	III
68	Features of TCP	--	he main TCP features are connection management, reliability, flow control and congestion control. Connection management includes connection initialization (a 3-way handshake) and its termination. The source and destination TCP ports are used for creating multiple virtual connections.	III
69	Classical TCP	--	Transmission Control Protocol (TCP) is the transport layer protocol that serves as an interface between client and server. ... In simple terms, the traditional TCP is defined as a wired network while classical TCP uses wireless approach. Mainly TCP is designed for fixed networks and fixed, wired networks.	III

70	Mobile TCP	--	The M-TCP (mobile TCP)1 approach has the same goals as I-TCP and snooping TCP: to prevent the sender window from shrinking if bit errors or disconnection but not congestion cause current problems. ... M-TCP splits the TCP connection into two parts as I-TCP does.	III
71	T-TCP	--	It is a transaction-oriented protocol based on a minimum transfer of segments, so it does not have the speed problems associated with TCP.	III
72	Indirect TCP	--	I-TCP utilizes the resources of Mobility Support Routers (MSRs) to provide transport layer communication between mobile hosts and hosts on the fixed network.	III
73	Snooping TCP	--	This approach is designed to solve the end-to-end semantics loss in I-TCP. The basic concept is to buffer packets close to the mobile node and retransmit them locally if a packet is lost.	III
74	Full Duplex Transmission	--	The term full-duplex describes simultaneous data transmission and receptions over one channel. A full-duplex device is capable of bi-directional network data transmissions at the same time.	III
75	TCP-Services	--	TCP provides process-to-process communication using port numbers. Stream delivery services: TCP, unlike UDP, is a stream-oriented protocol.	III
Unit IV : Mobile Application Development Using Android				
76	Mobile application Development	--	Mobile application development is the process to making software for smart phones and digital assistants, most commonly for Android and ioS.	IV
77	Characteristics of Mobile Application	--	1. Portability 2. Social Interactivity 3. Connectivity 4.Individual 5.Small Size	IV
78	Advantages of Mobile Apps	--	1.Interactivity 2.Personalization 3.Complex calculations or reporting 4.Native Functionality 5.Internet connection is Not always required	IV
79	Android	--	Android is an open source and Linux-based Operating System for mobile devices such as smart phones and tablet computers.	IV
80	Android Application Architecture	--	1.Activity Manager and Fragment Manager 2.View 3.Notification Manager 4.Content Providers	IV
81	SQLite	--	It is used for structured Data storage.	IV

82	SDK	--	A software development kit (SDK) is a set of software development tools that allows the creation of applications for a certain software package, software framework.	IV
83	Types of Android Applications	--	1.Native apps 2.Hybrid apps. 3.Web apps. 4.Gaming apps. 5.Business apps.6.Lifestyle apps. 7.Entertainment apps. 8.Utility apps.	IV
84	Latest Android OS	--	Android OS is 11	IV
85	Widget	--	A mobile widget is the comparable equivalent for mobile devices (i.e. smart phones).	IV
86	Dalvik Virtual Machine	--	The **Dalvik Virtual Machine (DVM)** is an android virtual machine optimized for mobile devices. It optimizes the virtual machine for *memory*, *battery life* and *performance*.	IV
87	Android Lifecycle Methods	--	onCreate,onStart,onResume,onPuse,onStop,on Restart	IV
88	Android activity classes	--	Finding a given value, called search key given set. Searching Algorithms needs more memory space and sorted array.	IV
89	Manifest	--	The Android Manifest is an XML file which contains important metadata about the Android app.	IV
90	Meta-data	--	Metadata is defined as the data providing information about one or more aspects of the data;	IV
91	views	--	Views are used to create input and output fields in the an Android App.	IV
92	view object operations	--	Set properties Set focus Set-up listeners Set visibility	IV
93	widget	--	A mobile widget is the comparable equivalent for mobile devices (i.e. smart phones).	IV
94	Layout	--	Layout is the process of calculating the position of objects in space subject to various constraints.	IV
95	Linear layout	--	Linear Layout is a view group that aligns all children in a single direction, vertically or horizontally	IV
96	Table Layout	--	A TableLayout consists of a number of TableRow objects, each defining a row (actually, you can have other children, which will be explained below).	IV

97	Frame layout	--	Frame Layout is designed to block out an area on the screen to display a single item.	IV
98	Intents	--	A software mechanism that allows users to coordinate the functions of different activities to achieve a task	IV
100	Absolute Layout	--	An Absolute Layout allows you to specify the exact location	IV

Unit V : Mobile Application Development Using Android				
101	Android services	--	Android service is a component that is used to perform operations on the background such as playing music, handle network transactions, interacting content providers etc.	V
102	Local services	--	It is accessible to the application that is hosting it, and it is not accessible from other applications running on the device.	V
103	Remote services	--	Remote service in the standard context refers to a technician using software/hardware to access a client's devices offsite, in order to provide maintenance and support.	V
104	Broadcast receives	--	A broadcast receiver is an Android component that allows an application to respond to messages (an Android Intent) that are broadcast by the Android operating system or by an application.	V
105	Adapter	--	It is an adapter in regard to computing can be either a hardware component (device) or software that allows two or more	V
106	Adapter view	--	AdapterView is a View Group that displays items loaded into an adapter. The most common type of adapter comes from an array-based data source.	V
107	Array adapter	--	ArrayAdapter is an Android SDK class for adapting an array of objects as a datasource.	V
108	Simple cursor adapter	--	SimpleCursorAdapter. An easy adapter to map columns from a cursor to TextViews or ImageViews defined in an XML file.	V
109	Cursor	--	A cursor is the position indicator on a computer display screen where a user can enter text.	V
110	Base adapter	--	BaseAdapter is a common base class of a general implementation of an Adapter that can be used in ListView, GridView, Spinner etc.	V
111	List adapter	--	This class is a convenience wrapper around AsyncListDiffer that implements Adapter common default behavior for item access and counting.	V

112	List view	--	A list view is an adapter view that does not know the details, such as type and contents, of the views it contains	V
113	Grid view	--	A grid view or a data grid is a graphical control element that presents a tabular view of data.	V
114	Spinner adapter	--	Spinner adapter links the data to the spinner.	V
115	Uses of SQLite	--	SQLite can work with in-memory data or external files (e.g., CSV files) as if they were native database tables, providing a handy way to query that data.	V
116	Android interface point for saving data	--	1)Shared Preferences 2)Files 3)SQLite Databases 4)Content providers	V
117	User interface point of view	--	A mobile user interface (mobile UI) is the graphical and usually touch-sensitive display on a mobile device, such as a smartphone or tablet, that allows the user to interact with the device's apps, features, content and functions.	V
118	Data point of view	--	It preferences are a collection of name-value pairs, also known as key-value or attribute value pairs.	V
119	Location based services	--	Location-based services use a smart phone's GPS technology to track a person's location, if that person has opted in to allow it.	V
120	Mobile apps	--	A mobile application, most commonly referred to as an app, is a type of application software designed to run on a mobile device, such as a smartphone or tablet computer.	V
121	Widget types	--	Information widgets typically display a few crucial information elements that are important to a user and track how that information changes over time. Control widgets. ,Hybrid widgets.	V
122	Calendar in apps	--	1. Google Calendar. Cost: FreePlatforms: Android, iOS, Web. ... 2. Apple Calendar. Cost: Free. ... 3. Microsoft Outlook Calendar. ... 4. Calender	V
123	Text view	--	A TextView displays text to the user and optionally allows them to edit it.	V
124	Intents	--	An Intent in the Android operating system is a software mechanism that allows users to coordinate the functions of different activities to achieve a task.	V

125	Cursor adapter	--	A CursorAdapter makes it easy to use when the resource of a listview is coming from database and you can have more control over the binding of data values to layout controls.	V

<div align="center">Placement Questions</div>

126	What is Mobile Computing?	--	Mobile Computing is the process of computation on a mobile device.	
127	Building blocks of MC	--	Laptops, smart phones, handheld computers	
128	What information is stored on a SIM card?	--	SIM basically specifies our phone number but can also store contact information, telephone numbers, SMS messages, billing information and data usage etc.	
129	Advantages of Mobile Computing	--	1. Increased Productivity 2. Portability 3. Entertainment 4. Cloud Computing	
130	Three fundamental propagation behaviors	--	Ground wave: When the frequency is less. **Sky wave :** When the frequency is varied. Line of sight: When the frequency is more	
131	Different basic schemes of analog modulations in mobile computing	--	Amplitude modulation (AM) Frequency modulation (FM) Phase modulation (PM)	
132	Simple Storage Device	--	It is a storage device and the most widely used AWS service	
133	Advantages of a cellular system	--	Higher capacity ,Consume less transmission power, Local interference, Robustness	
134	Authentication center	--	The responsibility of the Authentication center (AuC) is protecting user identity and data transmission.	
135	Traffic multiframe		Traffic multiframe: The Traffic Channel frames are organized into multiframes that contain 26 bursts and takes 120 ms. Control multiframe:	
136	Control multiframe	--	The combination of 51 TDMA frames which contains data for the other logical channels, is called control multiframe.	
137	Why Mobile IP is so important?	--	Mobile IP is very important in Mobile communication because it facilitates mobile devices' users to move from one network to another without losing connectivity.	

138	GSM in Mobile Computing	--	To describe the protocols for second-generation (2G) digital cellular networks used by mobile devices.	
139	OVSF	--	OVSF is an acronym that stands for Orthogonal Variable Spreading Factor. It is used to separate the different data streams of a sender in UMTS by using orthogonal codes.	
140	Quality of Service		The quality of service in WLAN is more inferior than LAN.	
141	Infrastructure Network	--	In this network, the communication takes place between the wireless nodes and the access point.	
143	Ad-hoc network	--	It doesn't require any access point controlling medium.	
144	Where is infrared transmission used?	--	The Infrared data transmission is generally used to connect laptops, smartphones, Personal Digital Assistants (PDAs) to peripheral devices such as printers or desktop computers for synchronizing work files.	
145	Core building blocks of android	--	Activity,View, Intent,Service, Content Provider,Fragment etc.	
146	Activity in Android	--	Activity is like a frame or window in java that represents GUI. It represents one screen of android.	
147	Android toast	--	An android toast provides feedback to the users about the operation being performed by them	
148	Give a list of impotent folders in android	--	AndroidManifest.xml, build.xml ,bin/ , src/, res/ assets/	
149	The use of 'bundle' in android	--	We use bundles to pass the required data to various subfolders.	
150	How are layouts placed in Android?	--	Layouts in Android are placed as XML files.	

Faculty Prepared   **Signature**

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HoD