



# INSTITUTE OF AERONAUTICAL ENGINEERING

(AUTONOMOUS)  
Dundigal, Hyderabad -500 043

## COMPUTER SCIENCE AND ENGINEERING

### TUTORIAL QUESTION BANK

<b>Course Name</b>	<b>MOBILE COMPUTING</b>
<b>Course Code</b>	A70536-R15
<b>Class</b>	IV B. Tech I Semester
<b>Branch</b>	Computer Science and Engineering
<b>Year</b>	2018 – 19
<b>Course Coordinator</b>	Mr. C Raghavendra, Assistant Professor, CSE
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#### OBJECTIVES:

To meet the challenge of ensuring excellence in engineering education, the issue of quality needs to be addressed, debated and taken forward in a systematic manner. Accreditation is the principal means of quality assurance in higher education. The major emphasis of accreditation process is to measure the outcomes of the program that is being accredited.

In line with this, Faculty of Institute of Aeronautical Engineering, Hyderabad has taken a lead in incorporating philosophy of outcome based education in the process of problem solving and career development. So, all students of the institute should understand the depth and approach of course to be taught through this question bank, which will enhance learner's learning process.

<b>S. No</b>	<b>QUESTION</b>	<b>Blooms Taxonomy Level</b>	<b>Course Outcome</b>
<b>UNIT - I</b> <b>Introduction</b>			
<b>Part - A (Short Answer Questions)</b>			
1	Define applications of wireless communication.	Remember	01
2	Discuss the uses of wireless Technology.	Understand	01
3	Define GSM frame structure.	Remember	02
4	Explain how is localization done in GSM are reflected in the database.	Understand	04
5	Define a signal and types of signals.	Remember	01
6	Discuss polarization and its techniques.	Understand	09
7	State the challenges in wireless communication.	Remember	03
8	Define multiplexing. State the types of multiplexing.	Remember	08
9	Discuss the type of wireless networks.	Understand	05
10	State some limitations of mobile computing.	Understand	03
11	Define a terms GSM and GPRS.	Remember	03
12	Define Ad hoc Networks and describe its characteristics.	Remember	01

13	Describe location dependent services.?	Remember	01
14	What are the different services provided by GSM?	Remember	01
15	Define antenna and list types of antenna.	Remember	01
16	Give a brief note on GSM channel types.	Remember	02
17	Describe the difference between GSM and GPRS.	Understand	04
18	Write the concept of GPRS multi-slot class.	Understand	01
19	Discuss the call flow of mobile originated call in GSM.	Remember	02
20	Define the following i. Fixed and wired ii. Mobile and wired iii. Fixed and wireless iv. Mobile and wireless	Remember	04
<b>Part - B (Long Answer Questions)</b>			
1	Explain about High-Speed circuit switched data.	Understand	08
2	Explain functioning of a cellular network. How the given set of frequencies are used to increase capacity of a network.	Understand	07
3	Explain how interconnected mobile services switching centers enable a mobile station to communicate to another over long distance.	Understand	01
4	Describe the functioning of a smartcard. Why is secured hardware and software required for a smartcard.	Understand	01
5	Show the various subsystems and units in the GSM system architecture. How do these subsystems and units differ from those in GPRS.	Remember	04
6	Explain using schematic diagrams the synchronous, asynchronous, and synchronous packet types of data transfer.	Understand	05
7	Explain the working of a sensor-actuator pair by giving an example.	Understand	04
8	Discuss the advantage and disadvantage of cellular system with small cells.	Understand	03
9	Explain Digital Enhanced Cordless Telecommunication system.	Remember	04
10	Discuss the function of FCCH and SCH in GSM.	Remember	04
11	Explain the various applications of mobile computing.	Understand	03
12	Draw and explain the architecture of GSM with a neat diagram.	Remember	04
13	How routing carried out in GSM networks? Explain.	Understand	05
14	Write a short note on following terms a. Mobile Terminated Call b. Mobile Originated Call	Understand	04
15	List the various handovers carried out in GSM and explain any one of them in detail.	Understand	05
16	How is Mobility Management done in GSM? Explain.	Understand	05
17	Explain in detail about the General Packet Radio Service (GPRS).	Understand	03
<b>Part – C (Analytical Questions)</b>			
1	Discover the current numbers of subscribers for the different systems. As mobile communication bloom, no printed number is valid for too long.	Remember	02
2	Check out strategies of different network operators while migrating towards third generations systems. Why is a single common system not in sight?	Understand	04
3	Explain how the next generation of wireless systems will be different from the 3G technologies.	Understand	01
4	Briefly explain why security mechanisms are becoming increasingly important in wireless networks.	Understand	02
5	Explain why the international availability of the same ISM bands is important.	Remember	03

6	Explain why, typically is digital modulation not enough for radio transmission. What are general goals for digital modulation? What are typical schemes?	Remember	05
7	Assume all stations can hear all other stations. One station has to transmit and senses the carrier idle. Why can a collision still occur after the transmission?	Understand	04
8	Explain the term interference in the space, time, frequency, and code domain.	Understand	03
9	Consider duplex channels, what are the alternatives for implementation in wireless networks. What about typical wired networks.	Understand	02
<b>UNIT – II</b>			
<b>Wireless Medium Access Control (MAC)</b>			
<b>Part - A (Short Answer Questions)</b>			
1	Briefly discuss about Medium Access with Collision Avoidances.	Remember	01
2	Distinguish between classical and slotted aloha multiple access techniques.	Understand	03
3	Discuss how the Is IEEE 802.11 and Wi-Fi same/ State the purpose of Wi-8Fi.	Understand	04
4	Give a brief note about exposed and hidden terminal.	Remember	02
5	Define Pocket Reservation Multiple Access.	Understand	03
6	Define Inhibit Sense Multiple Access.	Remember	05
7	Give a brief note on Demand Assigned Multiple Access.	Understand	02
8	Define the term mobile node.	Understand	03
9	Write about Space Division Multiple Access.	Understand	04
10	Discuss about agent discovery.	Understand	03
11	Define the following I. Home and foreign networks II. Home and foreign agents	Understand	04
12	Describe generic routing encapsulation is used.	Remember	05
13	Give a note on agent solicitation.	Remember	03
14	Define polling in Time Division Multiple Access.	Remember	03
15	Describe Near and far terminals.	Remember	04
16	Write about Mobile IP support in IPv6.	Remember	02
17	Discuss about Carrier Sense Multiple Accesses.	Understand	05
<b>Part - B (Long Answer Questions)</b>			
1	Define the FHSS frequency-hopping technique. How does it help in receiving signals in the presence of frequency selective fading of the signals?	Remember	03
2	Explain about Code Division Multiple access.	Remember	04
3	Describe the process of optimization in Mobile IP with a suitable timeline diagram..	Remember	06
4	Explain about Time Division Multiple Access	Remember	07
5	Describe the need for mobile IP. Discuss goals and assumptions.	Understand	05
6	Discuss the various fields of registration request packet of mobile IP.	Understand	07
7	Explain the architecture of WIMAX in detail.	Understand	03
8	Describe Hipper LAN architecture with suitable diagrams.	Understand	04
9	Explain about IP packet delivery in Mobile IP.	Remember	02
10	Draw the MAC frame format and explain its various fields in detail.	Understand	05
11	Explain DFWMAC-DCF using CSMA /CA.	Understand	06
12	Describe DFWMAC-DCF with polling.	Understand	02
13	Explain about Reverse Tunneling in Mobile IP.	Understand	04
14	Explain with neat diagram of Agent advertisement packet of mobile IP.	Understand	08
15	Describe slow start of congestion control. How can fast recovery take place in the congestion avoidance phase.	Remember	08
16	Explain in detail about Dynamic Host Configuration Protocol.	Understand	06
17	Explain how registration of a Mobile Node is carried out with appropriate request and reply packet formats.	Remember	07
18	Describe End to End packet delivery is done in mobile IP.	Remember	05

19	Explain in detail about the IP in IP and minimal encapsulations.	Remember	04
20	State in detail about GRE encapsulation with the appropriate packet format.	Remember	06
<b>Part – C (Analytical Questions)</b>			
1	List the frequency bands and number of sub-carriers or carriers in a CDMA2000 system.	Understand	07
2	Explain how space, time, frequency, and code division methods control the simultaneous access to the medium by multiple source or channels of mobile terminals and base transceivers.	Remember	06
3	Discuss agent solicitation and agent advertisement messages are needed.	Remember	08
4	List out the various MAC management services and explain any 2 of them in detail.	Remember	07
5	Explain the use of multiple carriers by orthogonal coding. How does an OFDMA system differ from a CDMA system?	Remember	09
6	Describe indirect TCP. Explain the modifications in indirect TCP as the selective repeat protocol and mobile end transport protocol.	Understand	08
7	Explain the characteristics do the different orbits have. What are their pros and cons.	Remember	05
8	List the basic features of CDMA systems. Explain soft handover.	Remember	06
<b>UNIT - III</b>			
<b>Mobile Transport Layer</b>			
<b>Part - A (Short Answer Questions)</b>			
1	Define Care of Address. List differences between foreign agent COA and co-located COA.	Understand	05
2	Define handover mechanism. Mention different types of handover.	Remember	04
3	Discuss Advantage and Disadvantage of Mobile TCP.	Remember	05
4	Write the requirements to design general architecture of Mobile IP.	Remember	06
5	Discuss about traditional Transmission Control Protocol.	Remember	07
6	Discuss about congestion control in Transmission Control Protocol.	Remember	04
7	Describe slow start mechanism in Transmission Control Protocol.	Understand	05
8	List advantages of Indirect Transmission Control Protocol.	Remember	08
9	Describe the term snooping Transmission Control Protocol.	Remember	03
10	Discuss about mobile Transmission Control Protocol	Understand	04
11	Discuss selective retransmission and its merits in TCP.	Remember	05
12	Define generic routing encapsulation in Mobile IP.	Understand	07
13	Discuss about TCP/IP and OSI model.	Remember	06
14	Discuss about snooping TCP and its demerits.	Remember	04
15	Describe the use database transactional models.	Remember	06
16	Describe power-aware and context –aware computing.	Remember	07
17	List database hoarding techniques and its types.	Understand	08
18	Describe data caching and classification of cache invalidations.	Remember	04
19	Describe about client server computing with adaptation.	Remember	06
20	Define Quality of Service and transactional model.	Understand	07
21	Write a short note on query processing.	Understand	08
22	Explain about data recovery process.	Remember	07
23	Write a short note on three-tier architecture.	Remember	06
24	List advantages of hoarding the data at mobile device.	Remember	05
25	Describe broadcasting cache invalidation report.	Understand	06
26	Write about two phase commit transaction in transaction model.	Understand	07
27	What is the use of power-cast computing mechanism?	Remember	05
28	Write about recovery in transaction model.	Remember	06
29	State about rollback process in transaction model.	Remember	07
30	Write about capabilities for context-awareness.	Understand	04
31	Describe enumeration based category context –aware computing.	Understand	05
32	Describe Roll-base category in context –aware computing.	Remember	06

<b>Part - B (Long Answer Questions)</b>			
1	Explain the sequence number, window size, and ack number fields used in data flow control at TCP transport layer.	Understand	10
2	List the special requirements in transport layer protocols in case of 2.5G/3G mobile networks.	Remember	08
3	Describe fast transmission and fast recovery triggered.	Understand	07
4	Explain mobile TCP. How does a supervisory host send TCP packets to the mobile node and to a fixed connection?	Remember	09
5	Explain transaction oriented TCP. How does the integration of connection establishment, data transfer, and close functions.	Remember	07
6	Describe the special requirements in transport layer protocols in case of 2.5G networks.	Understand	08
7	Describe slow start of congestion control. How can fast recovery take place in the congestion avoidance phase?	Understand	05
8	Write about functions of snooping sub layer in the functions.	Remember	09
9	Explain about indirect TCP and snooping TCP.	Understand	07
10	Describe classical TCP improvements and snooping TCP.	Understand	10
11	Explain the situations in which a database can crush. How does a database recover using a recovery manager?	Remember	10
12	Write the advantages of hoarding data at the mobile device.	Understand	9
13	Explain the database transaction models and ACID rules.	Remember	10
14	Write data recovery process in detail.	Understand	9
15	Explain the Query processing of database.	Remember	10
16	Define quality of service and Explain the issues ensuring of QOS	Understand	9
17	Discuss data cache and web cache maintenance in mobile environments.	Remember	9
18	Explain in detail about the client-server computing with adaptation.	Understand	10
19	Write about caching invalidation mechanisms.	Remember	10
20	Explain about power aware computing.	Understand	9
<b>Part – C (Analytical Questions)</b>			
1	Explain 2G and 3G systems can transfer data. Compare these approaches with DAB/DVB and list reasons for and against the use of DAB/DVB.	Understand	08
2	Explain which web pages would be appropriate for distribution via DAB/DVB.	Remember	09
3	Define IEEE 802.11, Hiper LAN2, and Bluetooth respectively. Solve the hidden and terminal problem.	Understand	07
4	Discuss in what solutions collisions can occur in all three networks.	Remember	10
5	Distinguish between collisions on PHY and MAC layer.	Remember	10
6	If Bluetooth is a commercial success, what are remaining reasons for the use of infrared transmission for WLANs?	Understand	10
7	Explain packet flow if two mobile nodes communicate and both are in foreign networks.	Understand	08
8	Discuss how tunneling works in general and especially for mobile IP using IP-in-IP minimal, and generic routing encapsulation, respectively.	Remember	07
9	Explain the benefits of location information for routing in ad-hoc networks, which problems arise.	Remember	06
10	List the entities of mobile IP and describe data transfer from a mobile node to a fixed node and vice-versa. Why and where is encapsulation	Remember	07
<b>UNIT - IV</b>			
<b>Data Dissemination and Synchronization</b>			
<b>Part - A (Short Answer Questions)</b>			
1	Discuss about Push- based data delivery mechanisms.	Understand	11
2	Discuss about Selective Tuning in mobile IP.	Remember	10

3	Define Hash-based method in selective tuning.	Understand	13
4	Write about flexible indexing scheme.	Remember	12
5	Define Directory method in selective tuning.	Remember	11
6	List the various types of indexing techniques.	Understand	11
7	Define data dissemination broadcast models.	Understand	09
8	Discuss flat disk model for broad casting.	Remember	10
9	Discuss about communications asymmetry.	Remember	09
10	List advantages of pull based mechanisms in broad cast method.	Remember	11
11	Discuss about hybrid mechanisms.	Understand	11
12	List out various hash based mechanisms.	Remember	12
13	Discuss about index based mechanisms.	Understand	10
14	What is Data synchronization?	Remember	12
15	Describe temporal addressing in indexing techniques.	Remember	11
16	Discuss about data delivery methods.	Understand	10
17	Discuss about demand data scheduling.	Understand	09
<b>Part - B (Long Answer Questions)</b>			
1	Explain with diagram client and server framework.	Understand	08
2	Explain different types of synchronization.	Remember	11
3	Explain the need for domain-dependent specific rules. Explain the term WBXML.	Understand	10
4	Explain digital audio broadcasting.	Remember	09
5	Describe pull-based data delivery mechanism. What are the advantages and disadvantages of pull-based data delivery?	Remember	07
6	Write about communication asymmetry with neat diagram.	Remember	11
7	Which type of indexing is suitable for broad casting data through wireless channel? Why?	Understand	12
8	List out the advantages of data broad cast over point to point access.	Remember	09
9	Explain the following selective tuning techniques. a) Temporal addressing. b) Broadcast addressing c) Index based method. d) Distributed index based method.	Remember	10
10	Explain data delivery methods in detail.	Remember	09
11	The push based broadcasts are not suitable for large data size. Justify.	Understand	12
12	Explain about on demand data scheduling.	Remember	11
13	List the steps involved in retrieving the indexed data frames.	Understand	12
<b>Part – C (Analytical Questions)</b>			
1	Show the interaction of mobile IP with standard TCP. Draw the packet flow from a fixed host to a mobile host.	Understand	12
2	Name the requirements for a mobile IP and justify them. Does mobile IP fulfill them all?	Remember	11
3	List the entities of mobile IP and describe data transfer from a mobile node to a fixed node and vice versa.	Understand	10
4	Show the steps required for a handover from one foreign agent to another foreign agent including layer 2 and layer3.	Remember	11
5	Explain packet flow if two mobile nodes communicate and both are in networks.	Remember	12
<b>UNIT - V</b>			
<b>Mobile Ad hoc Networks (MANETs)</b>			
<b>Part - A (Short Answer Questions)</b>			
1	Mention the sensor networks applications.	Remember	12
2	Define symbian OS and its uses.	Remember	12
3	Discuss how does data store in windows CE databases and files.	Remember	10
4	Show that an XML document which can be used as Contacts in a mobile smart phone.	Remember	09



5	Define applications of Mobile Ad hoc Networks.	Remember	08
6	Write short note on routing algorithms.	Remember	09
7	Describe wireless sensor networks.	Remember	10
8	Analyze distributed network characteristics.	Remember	11
9	Discuss flat routing table driven protocol.	Understand	12
10	List the characteristics of MANETs.	Understand	11
11	Mention the properties in windows phone 7 OS features.	Understand	09
12	Describe memory manager features in Windows CE.	Remember	08
13	List the types of MANET routing algorithms.	Understand	10
14	Discuss about destination Sequenced Distance Vector Routing.	Remember	11
15	Discuss about dynamic source routing.	Remember	12
16	List the advantages in Dynamic Source Routing.	Remember	12
17	Discuss Cluster-head Gateway switch Routing protocol.	Understand	11
18	Discuss about security in Mobile Ad hoc Networks.	Understand	10
19	Write the functions of program and storage memories.	Understand	09
20	Discuss memory and file management.	Remember	09
21	Define java card and its uses.	Understand	08
22	Write the techniques for composing applications.	Remember	12
23	Discuss about operating systems.	Remember	12
24	Identify the I/O devices in subsystems management.	Remember	07
25	Discuss how are the applications developed for a windows phone 7 Device.	Understand	12

**Part - B (Long Answer Questions)**

1	Write about the application of wireless sensor networks in home personal area networking.	Understand	9
2	Explain MANETs. How does a MANETs differ from a fixed infrastructure network?	Remember	8
3	Describe an application of defining the cluster of nodes and features of CGSR protocol.	Remember	9
4	Write requirements for Java Card virtual machine.	Remember	10
5	Describe the properties of MANETs.	Remember	7
6	Explain the requirements of a mobile file system over the conventional one.	Remember	8
7	Write the advantages of MANETs and wireless sensor networks integrated with IPv6.	Remember	9
8	Explain in role of a gateway in connecting using different protocols .	Remember	9
9	Explain about Bluetooth.	Remember	11
10	Describe TORA. Compare the features of TORA with DSR and AODV protocols.	Understand	10
11	Compare the reactive and proactive routing protocols.	Understand	9
12	How does dynamic source routing handle routing. What is the motivation behind dynamic source routing compared to other routing	Remember	12
13	Explain the security threats to a MANET. Why a MANET faces grater security threats than a fixed infrastructure networks.	Remember	12
14	Describe in detail about WAP architecture.	Remember	8
15	Explain destination sequence distance vector routing algorithm in MANETs.	Remember	12
16	Explain in detail AODV routing algorithm for MANETS.	Remember	12
17	Compare DOM and SAX models of the documents. How are these parsed. Explain with examples.	Remember	9
18	Explain CLDC and CDC configurations.	Remember	12
19	Describe in detail about J2ME architecture in detail.	Remember	12
20	Write the packages in J2SE. Explain the APIs and class libraries in each.	Remember	9

**Part – C (Analytical Questions)**

1	Name mechanisms to improve web access for handheld devices. What is their common problem and what led finally to the development of WAP.	Understand	12
2	Compare the presented protocol stacks for WAP 2.0 and give application examples.	Remember	11
3	Name advantages and disadvantages of user acknowledgement in WTP. What are typical applications for both cases.	Remember	09

4	Explain the primary goals of WAP Forum efforts and how they are reflected in the initial WAP protocol architecture.	Remember	07
5	Explain why strong consistency of file systems is problematic in a wireless and mobile environment. What are the alternatives?	Remember	10
6	Name key difference between WAP 1.x and i-mode. What were problems in the early WAP days and why was i-mode that successful in Japan.	Understand	11

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