

Code No: R1642043

R16

Set No. 1

IV B.Tech II Semester Advanced Supplementary Examinations, Aug/Sep - 2022

SATELLITE COMMUNICATIONS
(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any FOUR questions from Part-B

PART-A(14 Marks)

1. a) List out the laws that describes the satellite motion. [3]
- b) Write the features of 3-axis stabilized satellites. [2]
- c) What is C/N ratio of a satellite link. [2]
- d) What is spreading and dispreading in CDMA. [3]
- e) List out the various earth station subsystems. [2]
- f) Write the applications of GPS. [2]

PART-B(4x14 = 56 Marks)

2. a) What are look angles? Describe with relevant mathematical expressions. [7]
- b) Explain the principle of launching and various satellite launch vehicles. [7]
3. a) Explain the functions of Telemetry, Tracking, Command and monitoring system with a neat block diagram. [7]
- b) Write short notes on Satellite antennas. [7]
4. a) What is the link equation? Derive the expression for it. [7]
- b) Explain briefly about uplink satellite circuits. [7]
5. a) What is intermodulation? How it effects the calculation of C/N in FDMA systems? Explain. [7]
- b) Draw and explain the frame structure of TDMA. [7]
6. a) Explain the basic architecture of earth station with a neat diagram. [7]
- b) What are the various operational NGSO constellation designs? Explain any one. [7]
7. a) Describe the features of various GNSS systems. [7]
- b) Explain the GPS receiver operation with a neat diagram. [7]



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Set No. 1

IV B.Tech II Semester Advanced Supplementary Examinations, Aug/Sep - 2022

WIRELESS SENSORS AND NETWORKS

(Common to Electronics and Communication Engineering and Electronics and Computer Engineering)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any FOUR questions from Part-B

PART-A (14 Marks)

1. a) Define sensor networks [3]
b) Give the list of the appropriate transceivers for WSNs. [3]
c) What are the requirements for wireless MAC protocols [2]
d) What are salient features of location-based routing [2]
e) List the issues and challenges in security provisioning of transport layer [2]
f) What do you mean by active and passive attacks [2]

PART-B (4x14 = 56 Marks)

2. a) Explain the various challenges of wireless sensor networks [7]
b) Explain the concept of Gateway in WSN. [7]
3. a) Compare MANET and WSN with suitable examples [7]
b) Write the main functions of physical layer for WSNs. Produce the most important parameters to be considered while designing the physical layer in WSNs [7]
4. a) Design the approaches and performance of S-MAC protocol [7]
b) Illustrate the basics of content-based protocol for WSN [7]
5. a) Explain about Power-Aware routing Protocols. [7]
b) What are the different routing protocols with efficient flooding mechanisms? [7]
6. a) Why does TCP not perform well in Adhoc wireless network? Explain. [7]
b) Write the differences between, Design goals and Design issues of transport layer protocol for Adhoc Wireless Networks. [7]
7. a) List out and explain how some of the internet properties of the wireless Adhoc networks introduce difficulties while implementing security in routing protocols. [7]
b) Write notes on State centric program. [7]



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IV B.Tech II Semester Advanced Supplementary Examinations, Aug/Sep - 2022

OPERATING SYSTEMS

(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any FOUR questions from Part-B

PART-A(14 Marks)

1. a) What are the various security issues that arise in multiprogramming and time shared systems? [3]
- b) Why is it importance for the scheduler to distinguish I/O-bound programs from CPU-bound programs? [2]
- c) What is Deadlock? [2]
- d) Explain why sharing a reentrant module is easier, when segmentation is used than when pure paging is used. [3]
- e) What are the various attributes that are associated with an opened file? [2]
- f) List out the various interrupts in LINUX. [2]

PART-B(4x14 = 56 Marks)

2. a) "Operating system acting as control program", Justify your answer. [5]
- b) What is system call? With an example explain how system calls are raised? [9]
3. a) Define process and explain with a neat diagram about process five state model. [7]
- b) How shared memory is used for inter process communication? Explain. [7]
4. a) Compute the number page faults for optimal page replacement strategy for the given reference string 1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8,9,5,4,5,4,2 with 4 page frames. [7]
- b) Explain different structures of page tables with strengths and weaknesses. [7]
5. a) Consider the following snapshot of the system [9]

	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	0	5	2	0
P1	1	0	0	0	1	6	5	0				
P2	1	3	5	4	1	3	5	6				
P3	0	6	3	2	0	6	5	2				
P4	0	0	1	4	0	6	5	6				

- i) Find whether this system is safe or not. Also find safe sequence that satisfies safety requirement.
- ii) If a request from process P1 arrives for (0,4,2,0) can the request be granted immediately?
- b) Discuss Mutual-exclusion implementation with test and set() instruction. [5]

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6. a) Discuss various methods for free-space management. [7]
b) Discuss directory implementation in detail. [7]
7. a) Explain Android Application Process management. [7]
b) Discuss Dalvik virtual machine in Android? [7]



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IV B.Tech II Semester Advanced Supplementary Examinations, Aug/Sep - 2022

CELLULAR AND MOBILE COMMUNICATIONS

(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any FOUR questions from Part-B

PART-A(14 Marks)

1. a) What is Grade of Service? [3]
- b) What is the phase difference between direct and reflected paths [3]
- c) Define the gain of an antenna and write the expression for it. [2]
- d) What are the advantages of cell sectorization over cell splitting. [2]
- e) What is handoff? Describe its classification. [2]
- f) List different handover techniques in GSM. [2]

PART-B(4x14 = 56 Marks)

2. a) Explain the steps involved in planning a cellular system. Illustrate how the performance criteria is evaluated. [7]
- b) Explain briefly different ways of improving coverage and capacity in cellular systems [7]
3. a) Distinguish between signal and co-channel interference received by the mobile unit and cell site. [7]
- b) In detail Illustrate the different types of non-co channel Interferences in a cellular environment. [7]
4. a) What are the different techniques to utilize the frequency spectrum, give a brief explanation? [7]
- b) Explain in detail access channels and operational techniques. [7]
5. a) Let a distance between two fixed stations be 25 Km. The effective antenna height at one end h_1 is 100m above sea level. Find h_2 at the other end so that the received power always meets the condition $P_r \geq P_o$ and find the maximum received power P_r for $P_r = 4P_o$. [7]
- b) Derive the path loss prediction model in non obstructive condition. [7]
6. Write short notes on the following (a) Cell splitting (b) Vehicle locating methods (c) Dropped cell rate [14]
7. a) Why CDMA is needed and explain it with an example? [7]
- b) List the difference between TDMA/FDMA/CDMA. [7]



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IV B.Tech II Semester Advanced Supplementary Examinations, Aug/Sep - 2022

CELLULAR MOBILE COMMUNICATION

(Electronics and Communications Engineering)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

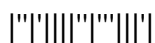
Answer any THREE questions from Part-B

PART-A (22 Marks)

1. a) Explain the uniqueness of mobile radio environment. [4]
b) Explain the concept of Co-channel measurement. [3]
c) Discuss about umbrella pattern antenna. [4]
d) What is sectorization. [3]
e) Discuss the concept of cell splitting [4]
f) Discuss the main subsystems of GSM architecture. [4]

PART-B (3x16 = 48 Marks)

2. a) Distinguish Analog and Digital Cellular systems. [8]
b) Derive the co-channel interference reduction factor for seven-cell frequency reuse pattern. [8]
3. a) Explain the antenna parameters that can affect the cellular system design so as to improve the signal quality upon reducing the co-channel interference? [8]
b) Explain why there is a constant standard deviation along a path-loss curve? [8]
4. a) Explain the synthesis of sum and difference patterns. [8]
b) Discuss the concept of High gain antenna with neat sketches. [8]
5. a) Give detailed description on fixed channel assignment schemes. [8]
b) Draw the frequency management chart and explain the channels present in cellular system. [8]
6. a) What are the different types of Hand off? Explain the implementation strategy of any two techniques. [8]
b) Explain the vehicle locating methods. [8]
7. a) Discuss the GSM frame structure. [8]
b) Distinguish TDMA and CDMA. [8]



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R16

Set No. 1

IV B.Tech II Semester Advanced Supplementary Examinations, Aug/Sep - 2022

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any FOUR questions from Part-B

PART-A (14 Marks)

1. a) Define the terms Accuracy and Precision. [2]
b) Draw the basic wave analyzer? [2]
c) What are the different controls available on CRO panel? [2]
d) What is Schering bridge? Write the equation of balance for the bridge? [2]
e) List any three classifications of transducers? [3]
f) How do you measure humidity? [3]

PART-B (4x14 = 56 Marks)

2. a) List the different types of errors in measurements? Explain in detail. [7]
b) How the range of DC ammeter and DC voltmeter can be extended. Derive the expression to find the shunt resistance and multiplier resistance? [7]
3. a) Draw the block diagram of a spectrum analyzer and explain its working. [7]
b) With the help of neat sketch explain the working principle of harmonic distortion analyzer. [7]
4. a) Write short notes on Lissajous patterns. Explain how are they used for the measurement of frequency and phase angle? [7]
b) Draw a neat block diagram of a Cathode Ray Oscilloscope and specify the function of each block. Also Explain its working principle [7]
5. a) What is the criterion for balance of a Wheatstone bridge? State the limitations of a Wheatstone bridge. How is it overcome? [7]
b) What is Maxwell's bridge? Derive the equation of balance for the bridge? [7]
6. a) Describe the construction, theory and working of thermocouples. Explain the different types of compensations used in the measuring system? [7]
b) Briefly discuss about the working of piezoelectric transducers and draw its electric equivalent circuit? [7]
7. a) Explain the significance of load cell in static and dynamic force measurement. [7]
b) What do you understand by multichannel DAS? State the different ways in which multichannel DAS are used. [7]



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ELECTRONIC MEASUREMENTS & INSTRUMENTATION

(Electronics and Communications Engineering)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

PART-A (22 Marks)

1. a) Discuss briefly the essential features of indicating instruments [4]
b) Define wave analyzers? [4]
c) List the different control knobs available on the front panel of the CRO. [3]
d) Define Gauge factor [3]
e) What are the factors to be considered for selections of transducers? [4]
f) What is DAS with the required figures? [4]

PART-B (3x16 = 48 Marks)

2. a) Discuss briefly the different types of static errors of a measuring instrument. [8]
b) Explain the working of a true RMS voltmeter with the help of a suitable block diagram. [8]
3. a) State the application of a spectrum analyzer. [4]
b) Draw the block diagram of a distortion measuring component type meter and explain its working. [12]
4. a) With the help of neat diagram illustrate the function and components of CRT. [8]
b) Draw the Block diagram of digital storage oscilloscope and explain the function of each block in detail. [8]
5. a) The basic AC bridge consists of the following constants: AB: $R=400\Omega$, BC: $R=150\Omega$, CD: unknown and DA: $R=100\Omega$ in series with $L=10\text{mH}$. Oscillator frequency is 1KHz. Determine the constants of arm CD. [6]
b) What is Wien's bridge? Derive the expression for the frequency. [10]
6. a) Explain how LVDT is used to measure linear displacement. [8]
b) Show that a parallel plate capacitor serves as the most suitable transducer for measurement of linear and angular displacements. [8]
7. How do we measure (i) moisture (ii) pressure (iii) humidity [16]

