

Code No:R1642041

R16

Set No. 1

IV B.Tech II Semester Regular/Supplementary Examinations, June - 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

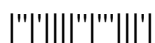
Answer any FOUR questions from Part-B

PART-A(14 Marks)

1. a) What is Cell splitting and explain [2]
b) What is co-channel interference? [3]
c) What is borrowing channel allocation in mobile communication? [2]
d) List out the types of antennas used at cell site [2]
e) Explain the concept of intersystem handoff [3]
f) Write the features of CDMA [2]

PART-B(4x14 = 56 Marks)

2. a) Explain the basic cellular system with neat diagram [7]
b) The 2G GSM has 125 channels in the uplink and 125 channels in the down link. Each channel has a bandwidth of 200 kHz. What is the total bandwidth occupied in both uplink and down link [7]
3. a) Describe about desired C/I from a normal case in an omni-directional antenna system [7]
b) What are the different types of non-co-channel interference? Explain [7]
4. a) Compare fixed channel assignment and non-fixed channel assignment? [7]
b) What are the various techniques used by cellular communication system to improve coverage and capacity in cellular systems? [7]
5. a) How interference can be reduced by using the directional antennas at cell site. [7]
b) Write the short notes on spaced diversity antennas. [7]
6. a) What are the various handoff strategies based on algorithms of handoff? Explain in detail. [7]
b) What are the different vehicle locating methods? Explain in detail [7]
7. a) What are the different types of channels for GSM? Explain. [7]
b) Explain the basic architecture of 3G cellular system with a neat sketch [7]



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Set No. 2

IV B.Tech II Semester Regular/Supplementary Examinations, June - 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) Write the differences between macro and micro cellular structures? [2]
b) Write the different types of non-co-channel interference. [3]
c) What is the importance of frequency management chart? [2]
d) Write the features of umbrella pattern antennas [2]
e) Define the dropped call rate [3]
f) List out few comparisons of TDMA and CDMA [2]

PART-B(4x14 = 56 Marks)

2. a) Explain the performance of cellular mobile system [7]
b) Write short notes on mobile fading characteristics. [7]
3. a) Explain how co-channel interference is measured in real time mobile radio transceivers [7]
b) What is the purpose of cell sectoring? Explain how co-channel interference in a cellular system may be reduced? [7]
4. a) Explain the phase difference between a direct path and a ground-reflected path. [7]
b) Briefly explain the effects due to human made structures. [7]
5. a) Explain space diversity antennas used at cell site [7]
b) Describe the effects of cell site antenna heights and signal coverage cells [7]
6. a) What are the different types of handoffs? Explain how to implement them [7]
b) Plot the signal strength for a two level handoff scheme and explain it. [7]
7. a) Explain in detail the architecture of 3G cellular systems with neat diagram. [7]
b) Describe the basic principle and advantages of TDMA. [7]



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Set No. 3

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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) List the main features of 3G cellular systems [2]
- b) Define co-channel interference reduction factor [3]
- c) Describe the concept of overlaid cell [2]
- d) Write the features of Omni directional antennas? [2]
- e) Define the dropped call rate. [3]
- f) Compare the basic technological differences between GSM and CDMA [2]

PART-B(4x14 = 56 Marks)

2. a) Describe the analog and digital cellular systems and limitations of AMPS standard [7]
- b) Why does the mobile phone cell, the basic geographic unit of cellular system, have a hexagonal shape? Explain [7]
3. a) Define co-channel interference. How is it measured at the mobile unit and cell site? [7]
- b) Write a brief note on designing directional antenna system considering the effect of interference [7]
4. a) Describe the effect of antenna height in near and long distance mobile propagation. [7]
- b) Explain the mobile radio propagation over water and flat open area and write the general expression [7]
5. a) Explain the construction & Working principal of broadband umbrella pattern antennas in cellular systems [7]
- b) Explain omni directional antenna in detail with neat diagram. [7]
6. a) With a neat diagram explain intersystem handoff in detail [7]
- b) Explain the difference between soft handoff and hard handoff [7]
7. a) What are the advantages of digital cellular systems over analog? [7]
- b) Describe the principle, advantages and disadvantages of CDMA technique [7]



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Set No. 4

IV B.Tech II Semester Regular/Supplementary Examinations, June - 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) Explain the concept of Cell sectoring. [2]
b) What are the types of interferences in cellular system? [3]
c) Explain the concept of paging channels in detail. [2]
d) List out the types of antennas used at cell site. [2]
e) List out the different vehicle locating methods. [3]
f) Write the features of OFDMA. [2]

PART-B(4x14 = 56 Marks)

2. a) Explain the concept of frequency reuse channels and frequency reuse distance. [7]
b) Why do all cells not have uniform size in a practical cellular network? Explain. [7]
3. a) What is Interference and determine the real time co-channel interference in cellular systems. [7]
b) What is titling antenna? How can these antenna patterns reduce the co-channel interference? [7]
4. a) Describe the form of a point-to-point model and explain its types [7]
b) Explain the mobile signal propagation over water and flat area. [7]
5. a) What are the different types of antennas used at cell site? Explain them in detail. [7]
b) Define space diversity technique and explain horizontally and vertically oriented space diversity antennas [7]
6. a) What is meant by handoff? Describe the classification of handoff processes. [7]
b) What is meant by handoff initiation? Explain the different methods of handoff initiation with suitable diagrams. [7]
7. a) Elaborate the concept of GSM channels in digital cellular networks. [7]
b) Draw the TDMA frame structure and explain the significance of each slot. [7]



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Set No. 1

IV B.Tech II Semester Supplementary Examinations, June - 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 about co-channel interference reduction factor. [4]
b) Explain about long distance propagation. [3]
c) Write a short note on high gain antennas. [4]
d) Define a dropped call rate and explain how it differ from blocked call. [4]
e) Difference between soft handoff and hard handoff. [3]
f) List some differences of GSM and GPRS. [4]

PART-B (3x16 = 48 Marks)

2. a) What are the various mobile phone technologies that are existing in addition to the cellular networks? [8]
b) What are the different types of Cell Splitting? Explain. [8]
3. a) Give the differences between co-channel interference and neighboring channel interference. [8]
b) Explain the concept of lowering the antenna height to decrease the co-channel interference. [8]
4. a) What are the different types of antennas used at cell site? Explain them in detail. [8]
b) Explain the concept of diversity antenna spacing in cell site with a simple diagram. [8]
5. a) Discuss about non fixed channel assignments. [8]
b) Describe the grouping of the voice, setup, and paging channels. [8]
6. a) Explain about the types of Hand offs in detail. [8]
b) Explain in detail about microcells and its advantages. [8]
7. a) Explain the principle of CDMA with a neat sketch and write its advantages and disadvantages. [8]
b) Explain the architecture of NA-TDMA. [8]



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R13

Set No. 1

IV B.Tech II Semester Supplementary Examinations, June - 2022

DISTRIBUTED SYSTEMS

(Common to Computer Science and Engineering & Information Technology)

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) Give the challenges in resource sharing using web. [4]
b) Explain the operations of request reply protocol [4]
c) Describe the model for method invocation between objects in different processes [4]
d) What is the role of address space in operating system functionality? [3]
e) Write about file groups in hierarchic file system [3]
f) Write short note on nested transactions. [4]

PART-B (3x16 = 48 Marks)

2. a) Give the typical structure of intranet. And also discuss main issues arising in the design of components of intranet. [8]
b) Discuss the design requirements for distributed architectures. [8]
3. a) What is marshaling? How it can be generated in COBRA. [8]
b) Write about the outstanding issues related to TCP stream communication between client and server. [8]
4. a) Build client and server programs to support distributed objects in java language. [8]
b) With neat sketch explain the functions of remote object references and remote interfaces. [8]
5. Explain the following [16]
 - a) server threading architectures
 - b) threads versus multiple processes
 - c) thread implementation
6. a) Describe the election process using bully algorithm. [8]
b) Explain how nodes and objects are located by using routing overlay distributed algorithm. [8]
7. a) Describe the lock compatibility and its implementation in strict two phase lock. [8]
b) Give the system model for group communication and also explain the role of group membership service. [8]

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Set No. 1

IV B.Tech II Semester Regular/Supplementary Examinations, June - 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) Explain the importance of Ohmmeters [3]
b) Draw the Basic wave analyzer and explain its operation [2]
c) Define deflection sensitivity of a CRT? [2]
d) Derive the balance condition of Bridge [2]
e) Explain the different Advantages of Electrical Transducers in detail [2]
f) Explain any one of the method for the measurement of humidity? [3]

PART-B(4x14 = 56 Marks)

2. a) Explain the following terms in detail [7]
(i) Accuracy (ii) Resolution (iii) Precision (iv) Expected value
b) List out different AC voltmeters and explain the working of any one voltmeter in detail [7]
3. a) What is Heterodyning and explain the use of Heterodyning in spectrum analyzer along with its circuit diagram [7]
b) Write short notes on Function Generator in detail [7]
4. a) Explain the concept of Storage oscilloscope along with circuit diagram [7]
b) Draw the circuit diagram of Sampling oscilloscope and explain its operation in detail. [7]
5. a) Draw and explain the operation of Wien Bridge and derive the bridge balance condition [7]
b) In the case of a Schering Bridge, arm AC has $R=7.7k\Omega$. Arm CD has unknown elements. Arm BD has $C=0.01\mu F$ Arm AB= $4.7K\Omega$ is shunt with 1MF. Determine Values of components in the arm CD [7]
6. a) Explain the Resistive position Transducer along with circuit diagram. [7]
b) List out different types of Strain Gauges used Transducer and explain any one in detail. [7]
7. a) With the help of a neat sketch explain the principle and working of Electromagnetic Flow meter. What are the advantages and Limitations of this Method? [7]
b) Briefly explain the working principles and measurement of force by any two nonelectric techniques? [7]



IV B.Tech II Semester Regular/Supplementary Examinations, June - 2022
ELECTRONIC MEASUREMENTS AND INSTRUMENTATION
(Electronics and Communication Engineering)

Time: 3 hours**Max. Marks: 70**

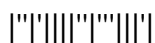
Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B

PART-A(14 Marks)

1. a) Explain the term Dynamic error in detail [3]
b) Distinguish between spectrum analyzer and harmonic distortion analyzer [2]
c) Explain the concept of delay line in CRO [2]
d) Define Quality factor and give the expressions for the inductive and capacitive Quality factors [2]
e) List out difference between active and passive transducer in detail [2]
f) Explain the significance of load cell in force measurement [3]

PART-B(4x14 = 56 Marks)

2. a) Draw the Sketch and explain the principle and operation of Thermocouple type Ammeter. [7]
b) Two ammeters are joined in series in a circuit carrying 150 A. one ammeter has a resistance of 20000 ohm shunted by 0.10 ohm while the other ammeter has a resistance of 100 ohm shunted by 0.02ohm. if the shunts are interchanged what would be the readings of the instruments? [7]
3. a) What is AF oscillators and explain its operation along with circuit diagram. [7]
b) Draw the circuit diagram of Digital Fourier Analyzers and explain its operation. [7]
4. a) Explain the Measurement procedure of Lissajous patterns with one example. [7]
b) Explain the principle and working of a storage oscilloscope [7]
5. a) Draw the circuit diagram of Schering's Bridge and explain the operation of it. [7]
b) Explain the "parallel-connection" method of using Q-meter and Obtain the expressions for resistance, reactance and Q factor. [7]
6. a) Draw the Linear variable differential Transducer and explain its operation in detail. [7]
b) What is Thermistor and explain its importance along with advantages of it? [7]
7. a) What is proximity? Explain the operation of proximity transducer. [7]
b) How angular speed shall be measured using the digital method? [7]



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Set No. 3

IV B.Tech II Semester Regular/Supplementary Examinations, June - 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) Draw the series type Ohmmeter and explain its operation [3]
b) Define the terms Dynamic range and Harmonic mixing [2]
c) List out specifications of CRO [2]
d) What are the problems associated with shielding? And explain the remedies [2]
e) Define Gauge factor for transducer and explain its significance [2]
f) List the applications of Hydraulic force meter [3]

PART-B(4x14 = 56 Marks)

2. a) Draw the Block diagram of successive approximation type Digital voltmeter and explain its operation [7]
b) Differentiate between a true R.M.S meter and an average responding meter. [7]
3. a) Draw the circuit diagram and explain the operation of Digital spectrum analyzer [7]
b) Explain the requirements of pulse with reference to generator along with block diagram. [7]
4. a) Draw the circuit diagram of Sampling oscilloscope and explain its operation in detail. [7]
b) Explain various types of probes used for CRO. [7]
5. a) Explain the operation of Maxwell's Bridge and derive the condition for balance of a Bridge. [7]
b) In the case of Hay's Bridge one arm has resistance of $100\text{K}\Omega$. Another arm has a resistance of $6.7\text{K}\Omega$. The third arm $16\text{K}\Omega$ in series with a capacitor of $0.5\mu\text{F}$. Determine the values of the elements R_x and L_x in the fourth arm. [7]
6. a) What is Piezo-electric effect? Explain the operation of Piezo-electric transducer. [7]
b) Explain the working of capacitive transducers. [7]
7. a) Define and explain about Absolute humidity, Relative humidity, Specific humidity. Elaborate how humidity is measured. [7]
b) Explain in detail about the stroboscope for the measurement of speed. [7]



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Set No. 4

IV B.Tech II Semester Regular/Supplementary Examinations, June - 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) Give a classification of voltmeters [3]
b) List the applications of wave analyzers [2]
c) List out the different Futures of CRT in detail [2]
d) Explain the limitations of Wheatstone bridge [2]
e) Write short notes on Sensistor's and Thermistor's [2]
f) Explain the concept of Data acquisition systems in detail [3]

PART-B(4x14 = 56 Marks)

2. a) Explain in detail about DC voltmeters with the suitable example [7]
b) A Voltmeter having a sensitivity of 30k/V reads 80V on a 100V scale, when connected across an unknown resistor. The current through the resistor is 2mA. Calculate the % of error due to loading effect [7]
3. a) Explain the working principle of a harmonic distortion analyzer along with circuit diagram [7]
b) Explain the significance and working of frequency selective wave analyzer [7]
4. a) Illustrate about construction of Cathode Ray Oscilloscope. [7]
b) Explain the operation of trigger pulse circuit along with circuit diagram [7]
5. a) Describe the method of measuring high impedance using Q-meter. [7]
b) Draw the circuit diagram of Maxwell's bridge and derive conditions of balance [7]
6. a) What is the difference between photo-emissive, photo-conductive and photovoltaic transducers? [7]
b) Derive the expression for Gauge factor of a strain Gauge. [7]
7. a) Define moisture and explain a method to measure it [7]
b) Explain the working principle of an accelerometer along with diagram [7]



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Set No. 1

IV B.Tech II Semester Supplementary Examinations, June - 2022
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) A 500 Volts voltmeter is accurate within $\pm 1\%$ at full scale. Calculate the limiting error when the instrument is used to measure a voltage of 200 Volts. [4]
- b) What are the limitations of AF Oscillators? [4]
- c) Explain the concept of Triggered Sweep CRO along with circuit diagram. [4]
- d) Define Accuracy, Resolution, Sensitivity [3]
- e) Explain the working principle of Linear variable differential Transformer(LVDT). [4]
- f) List the applications of Hydraulic force meter. [3]

PART-B (3x16 = 48 Marks)

2. a) Illustrate in detail about the dynamic characteristic of instruments. [8]
- b) Mention the use of Ohmmeter. Draw and explain the operation of Series Ohmmeter and Shunt Ohmmeter. [8]
3. a) Draw the circuit diagram of Digital Fourier Analyzers and explain its operation. [8]
- b) Describe the generation of square and pulse in laboratory type generator. [8]
4. a) With a neat block diagram, explain the operating principles of Dual trace CRO. Also, give the significance of vertical deflection plates in a CRT. [8]
- b) Elaborate the different modes of operation in Dual Trace Oscilloscope. [8]
5. a) Explain the construction of Anderson's Bridge and Draw the phasor diagram of it. [8]
- b) Quantitatively explain about a bridge which is used for the measurement of the High Quality factor values. [8]
6. a) With a neat diagram, explain the construction operation and applications of LVDT [8]
- b) Explain strain construction principle and also derive expression for gauge factor. [8]
7. Write short notes on the following
- a) Measurement of pressure [8]
- b) Measurement of proximity [8]



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Set No. 1

IV B.Tech II Semester Regular/Supplementary Examinations, June - 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) How to determine look angle in geostationary satellite? [3]
b) What is the significance of spacecraft subsystem? [2]
c) What is free space loss (FSL)? [2]
d) Differentiate multiplexing and multiple access. [2]
e) Describe the operation of Dual cone sensor. [3]
f) List the major sources of errors in a GPS receiver. [2]

PART-B(4x14 = 56 Marks)

2. a) Explain the functions of each element of a Mobile Satellite Service(MSS) [7]
b) Describe various orbital parameters required to determine a satellite's orbit? [7]
3. a) Explain how the spin stabilization shall take place? Discuss. [7]
b) Discuss about 6/4 GHz communication subsystem. [7]
4. a) Narrate the process of the design of downlink in satellite communications. [7]
b) What is the effect of noise and interference on the performance of satellite? [7]
5. a) Explain about the frequency division multiple access of satellite system with a suitable example. [7]
b) An antenna has a noise temperature of 35 K and it is matched into a receiver which has a noise temperature of 100 K. Calculate the noise power density and the noise power for a BW of 36 MHz. [7]
6. a) Explain each block of the block diagram of Earth station transmitter. [7]
b) Discuss about the delay and throughput in satellite system. [7]
7. a) Discuss in detail about GPS position location principles. [7]
b) What is the importance of the costal loop in GPS receiver? Discuss [7]



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Set No. 2

IV B.Tech II Semester Regular/Supplementary Examinations, June - 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 the applications of satellites. [2]
b) What is the significance of spin stabilization? [2]
c) What is antenna pointing loss? Explain. [2]
d) Write about Time division multiple access (TDMA). [3]
e) Explain the structure of cassegrain antenna. [3]
f) What is Costas loop? [2]

PART-B(4x14 = 56 Marks)

2. a) Discuss in detail about the design considerations of a satellite communication system. [7]
b) How can be the look angle determination can be done?. [7]
3. a) Explain in detail about tracking subsystem with neat block diagram. [7]
b) Discuss about spacecraft subsystems. [7]
4. a) Discuss about noise figure and temperature and derive them. [7]
b) Draw the satellite uplink model and discuss each block. [7]
5. a) Find the expression for transmitted power of a satellite using FDMA. [7]
b) Explain the Traffic burst in TDMA. [7]
6. a) Discuss about monitoring and control for an earth station equipment. [7]
b) Illustrate the scan angle of an individual beam width within instantaneous coverage. [7]
7. a) How GPS receiver works? [7]
b) Write short notes on differential GPS. [7]



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Set No. 3

IV B.Tech II Semester Regular/Supplementary Examinations, June - 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

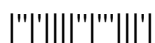
Answer any FOUR questions from Part-B

PART-A(14 Marks)

1. a) Define Kepler's laws and list the orbital elements of a satellite. [2]
b) What are the requirements of telemetry system? [2]
c) Define noise figure. Find the relation between noise figure and noise temperature. [3]
d) Write about Processing Gain. [2]
e) Describe the terminal characteristics of NGOSS. [3]
f) How to avoid clock error in GPS satellite? [2]

PART-B(4x14 = 56 Marks)

2. a) Show that three communication satellites are necessary for earth's coverage. [7]
b) The longitude and latitude of an earth station are 73°E and 19°N . Calculate azimuth and elevation angles from earth station to a satellite launched at 135°E . [7]
3. a) Discuss about Telemetry, Tracking and command in satellite system. [7]
b) Describe various functions and characteristics of a transponder. [7]
4. a) Explain about the double conversion earth station receiver. [7]
b) Why uplink frequency is different from downlink frequency? Explain. [7]
5. a) Derive the overall carrier to noise ratio in FDMA. [7]
b) A satellite is in an elliptical orbit with a perigee of 1000km and an apogee of 4000km. find the period of the orbit and eccentricity of the orbit. [7]
6. a) Distinguish about the Low-noise amplifier and High power amplifier in satellite earth station. [7]
b) Explain the connectivity of LEO satellites to MCS via geostationary satellite. [7]
7. a) What are the signal processing techniques used in GPS receiver?. [7]
b) Explain the technique of range error budget used to provide accuracy in GPS C/A code receiver. [7]



IV B.Tech II Semester Regular/Supplementary Examinations, June - 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) Define perigee of a satellite. [2]
b) Write about Doppler effect. [2]
c) What is the effect of interference on the performance of satellite? [2]
d) Write about the importance of guard time in TDMA. [3]
e) What is meant by sun-sync orbit? [2]
f) Describe the codeless signal processing technique used in GPS receiver. [3]

PART-B(4x14 = 56 Marks)

2. a) Discuss the applications of satellite communications. [7]
b) Satellite receives sun rays at $7^{\circ}6'$ and the duration of eclipse is 56 min. calculate [7]
i) Radius of orbit ii) Height of the satellite.
3. a) Explain various ways of electrical power generation in satellite. [7]
b) Discuss about the practical satellite antennas. [7]
4. a) Explain about different losses exist in EM wave propagation from earth station to [7]
satellite.
b) Thermal noise in and earth station receives results in a $(C/N)_{dn}$ ratio of 20dB. A [7]
signal is received from a bent pipe transponder with a carrier to noise ratio
 $(C/N)_{up}=20dB$. What is the value of overall $(C/N)_o$ ratio at the earth station? If
the transponder introduces intermodulation products with $(C/N)_I$ ratio =24dB.
What is the overall $(C/N)_o$ ratio at the receiving earth station?
5. a) Distinguish about processing gain and intermodulation. [7]
b) Write about Code Division Multiple Access (CDMA). [7]
6. a) Draw the block diagram of earth station receiver and explain each block. [7]
b) Explain the general aspects of coverage and frequency considerations of low [7]
earth orbit.
7. a) Write subframe details of GPS navigation message. [7]
b) What are the major sources of errors in GPS receiver? Explain. [7]



Code No: RT42043C

R13

Set No. 1

IV B.Tech II Semester Supplementary Examinations, June - 2022

EMBEDDED SYSTEMS

(Common to Electronics and Communications Engineering, Electronics and Instrumentation 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 THREE questions from Part-B

PART-A (22 Marks)

1. a) Mention what are the major components in embedded system. [4]
- b) What is the use of Watch dog timer in embedded systems. [3]
- c) List out few comparisons of Compiler versus Cross-compiler [4]
- d) Explain about how to choose an RTOS [3]
- e) Define simulator? Explain its importance [4]
- f) List and describe the translation tools used in an embedded system [4]

PART-B (3x16 = 48 Marks)

2. a) Differentiate General Purpose Processor and Application Specific System Processor. [8]
- b) List out different Quality attributes of an Embedded systems and explain them [8]
3. a) Explain the merits and limitations of parallel port over serial interface [8]
- b) Explain about Timer and counting devices in Embedded Hardware [8]
4. a) Define Interrupt and explain the concept of Interrupt servicing mechanism in detail [8]
- b) Write short notes on Device driver programming in detail [8]
5. a) What is task scheduling? Explain Round Robin scheduling algorithm [8]
- b) Differentiate Multi threading and Multi tasking in detail. [8]
6. a) Explain the concept of Target hardware debugging along with one example [8]
- b) Explain in detail about Boundary scan along with circuit diagram [8]
7. a) Write short notes on quality assurance and testing of the embedded system design [8]
- b) Explain the concept of Testing on host machine in detail [8]



Code No:R164204A

R16

Set No. 1

IV B.Tech II Semester Regular/Supplementary Examinations, June - 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) Mention the major applications of Wireless Sensor Networks. [2]
b) List applications of WANETS. [2]
c) Compare any two contention-based protocols. [3]
d) Write the classification of routing protocols. [2]
e) Write about security protocols. [3]
f) Discuss about home automation. [2]

PART-B(4x14 = 56 Marks)

2. a) Narrate in brief about the challenges in designing a wireless sensor network [7]
b) Give details about single node architecture. [7]
3. a) Mention in detail about personal area networks (PANs) [7]
b) Distinguish about topologies of WANETS. [7]
4. a) Discuss about different types of MAC protocols. [7]
b) What is the principle behind scheduled based protocol? Explain any one schedule based protocol. [7]
5. a) Illustrate the basics of proactive routing protocol for WSN. [7]
b) Give the classification of routing protocol based on routing Topology. [7]
6. a) List the design goals of a transport layer protocol for Ad Hoc networks. [7]
b) Explain the differences between TCP over Ad Hoc wireless networks. [7]
7. a) Write short notes on state-centric programming. [7]
b) Describe the attacks in Network Security. [7]



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R16

Set No. 2

IV B.Tech II Semester Regular/Supplementary Examinations, June - 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) Discuss some challenges of WSNs. [2]
b) What is personal area network? [3]
c) What are the requirements for wireless MAC protocols? [2]
d) What are salient features of on demand protocols routing? [3]
e) Mention the design goals of a transport layer protocol. [2]
f) Write the applications of wireless sensor networks [2]

PART-B(4x14 = 56 Marks)

2. a) Discuss in detail about the energy consumption of Sensor Nodes. [7]
b) Draw and explain sensor network architecture [7]
3. a) Narrate in detail trans-receiver design considerations of WSNS [7]
b) Distinguish hidden node and exposed node problem. [7]
4. a) How real time MAC protocol works? Give details. [7]
b) What are the design goals of a MAC protocol for Ad Hoc wireless networks? [7]
5. a) List out Hierarchical routing protocols. [7]
b) Write about power-aware routing protocols in WSNs. [7]
6. a) Discuss about the classification of transport layer solutions in detail. [7]
b) Compare TCP over Ad Hoc wireless networks in detail. [7]
7. a) Discuss about Node level software Platforms. [7]
b) Explain how the security provisioning in adhoc network differs from that in infrastructure-based network. [7]



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R16

Set No. 3

IV B.Tech II Semester Regular/Supplementary Examinations, June - 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 figure of merit. [2]
b) What are the applications in a MANET? [2]
c) Which mechanism used in contention based protocols. [2]
d) Mention few issues in designing routing protocols. [3]
e) Which protocol works on transport layer? [2]
f) Explain about node-level simulators. [3]

PART-B(4x14 = 56 Marks)

2. a) Explain in detail main sensor node hardware components with neat diagram. [7]
b) Explain in detail the concept of Gateway in sensor networks. [7]
3. a) Write about the responsibilities of physical layer and explain the design parameters of physical layer. [7]
b) Compare the topologies of PANs and WANETs. [7]
4. a) Write design steps for the approaches and performance of S-MAC protocol [7]
b) Write a short notes on contention based protocols with reservation mechanism. [7]
5. a) Differentiate between Table-driven and on-demand Routing protocols. [7]
b) What is the purpose of routing protocol and explain proactive routing with neat sketch? [7]
6. a) Write in brief about TCP with explicit link failure notification. [7]
b) Explain in brief about Security in Ad Hoc Wireless Networks? [7]
7. a) What are the design issues and challenges in security provisioning? [7]
b) What are the applications of wireless sensor networks based on sensor network platforms & tools? [7]



Code No: **R164204A**

R16

Set No. 4

IV B.Tech II Semester Regular/Supplementary Examinations, June - 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) State a few characteristic requirements of WSNs. [2]
b) Describe exposed node problem. [3]
c) Write about CSMA Protocol. [2]
d) Briefly explain hierarchical routing protocols. [3]
e) Mention few issues in designing a transport layer protocol [2]
f) Discuss the few programming challenges in sensor networks. [2]

PART-B(4x14 = 56 Marks)

2. a) Define Wireless sensor networks and mention its applications. [7]
b) Explain the concept of energy supply and consumption of sensor nodes in wireless sensor network. [7]
3. a) Write about different topologies of PANs [7]
b) Explain in detail about the different types of MANET routing Algorithms. [7]
4. a) Mention the MAC layer challenges in Wireless Sensor Networks. [7]
b) Discuss in detail about connection-based protocols with scheduling mechanism? [7]
5. a) Distinguish about efficient flooding routing protocols. [7]
b) Describe about various types of Hierarchical routing protocols. [7]
6. a) What are the differences between TCP over Ad Hoc wireless networks? [7]
b) What are the challenges in transport layer for Ad Hoc networks? [7]
7. a) Write note on network security attacks and key management in wireless sensor networks. [7]
b) Write short notes on Programming challenges in sensor network. [7]



Code No: **R164204C**

R16

Set No. 1

IV B.Tech II Semester Regular/Supplementary Examinations, June - 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

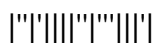
Answer any FOUR questions from Part-B

PART-A (14 Marks)

1. a) List out the services provided by an operating system. [3]
- b) When a process creates a new process, what is shared between parent process and child process? [3]
- c) Why are segmentation and paging sometimes combined into one scheme? [2]
- d) Define monitor. [2]
- e) What are the two ways of accessing disk storage? [2]
- f) List out the various interrupts in LINUX. [2]

PART-B (4x14 = 56 Marks)

2. a) Write the difference between the function and system call. Briefly explain the six major categories of system calls [7]
- b) Explain the Time-shared operating system. [7]
3. a) Write and explain various scheduling criteria's with respect CPU scheduling. [7]
- b) Explain the process scheduling with a neat queuing diagram. [7]
4. a) Explain the difference between External fragmentation and Internal fragmentation. How to solve the fragmentation problem using paging? [7]
- b) Compare the main memory organization schemes of continuous memory allocation, pure segmentation, and pure paging with respect to the following issues: i) External fragmentation, ii) Internal fragmentation, iii) Ability to share code across the process. [7]
5. a) What is a deadlock? Explain the necessary condition for deadlock [7]
- b) How does the signal() operation associated with monitors differ from the corresponding operation defined for semaphores. [7]
6. a) Elucidate the Indexed allocation of disk space. [7]
- b) Discuss various file access methods in detail [7]
7. a) Illustrate IPC mechanism in LINUX [7]
- b) Explain life cycle of android application [7]

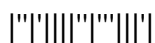


IV B.Tech II Semester Regular/Supplementary Examinations, June - 2022**OPERATING SYSTEMS****(Electronics and Communication Engineering)****Time: 3 hours****Max. Marks: 70***Question paper consists of Part-A and Part-B**Answer ALL sub questions from Part-A**Answer any FOUR questions from Part-B************PART-A (14 Marks)**

1. a) What is an operating system? Give some examples. [3]
b) List Fields of Process Control Block. [3]
c) What is the cause of Thrashing? [2]
d) Define the Safe, unsafe, and deadlock state spaces. [2]
e) What is a file? Give it properties [2]
f) What is an Activity Stack in Android? [2]

PART-B (4x14 = 56 Marks)

2. a) With a neat sketch, Explain in detail about the interrelation between various services provided by the operating system. [7]
b) What are the advantages and disadvantages of using the same system call interface for manipulating both files and devices? [7]
3. a) Discuss how the following pairs of scheduling criteria conflict in a certain settings. i) CPU utilization and response time, ii) Average turnaround time and maximum waiting time, and iii) I/O device utilization and CPU utilization. [7]
b) Explain typical elements of inter process communication models. [7]
4. a) Consider the following page reference string: 1,2,4,7,3,5,6,3,6,1,4,2,3,6,5,2 How many page faults would occur for the optimal page replacement algorithm, assuming four frames and all frames are initially empty. [7]
b) Discuss various issues related to the allocation of frames to processes. [7]
5. a) Explain the following deadlock avoidance algorithms: [7]
Banker's algorithm.
b) What is critical section problem? Write and explain Peterson's solution for it [7]
6. a) Compare the SCAN and C-SCAN disk scheduling algorithms with an example. [7]
b) Illustrate the various methods for free-space management. [7]
7. a) Discuss about interrupt mechanism in LINUX. [7]
b) What is Android? Is Android Open-Source? Discuss the features of Android. [7]



Code No: **R164204C**

R16

Set No. 3

IV B.Tech II Semester Regular/Supplementary Examinations, June - 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) Draw the Layered structure of Operating system. [3]
- b) What is Multi-Threading? [3]
- c) What is Virtual Address Space? [2]
- d) What is Critical Section Problem? [2]
- e) Write about Master File Directory in two-level directory structure. [2]
- f) List the components of LINUX. [2]

PART-B (4x14 = 56 Marks)

2. a) Explain the objectives and functions of Operating system [7]
- b) Why Real time operating systems are needed? Give some examples. [7]

3. Assume the following workload in a system. All jobs arrive at time 0 in the order given. [14]

Process	Burst	Time Priority
P1	30	High
P2	28	High
P3	04	Low
P4	16	Medium

Draw a Gantt chart illustrating the execution of these jobs using Priority CPU scheduling algorithm and also Calculate the average waiting time and average turnaround time.

4. a) Consider the following page reference string: 1,2,4,7,3,5,6,3,6,1,4,2,3,6,5,2 [7]
How many page faults would occur for the LRU page replacement algorithm, assuming four frames and all frames are initially empty.
- b) What is paging? Explain the hardware support given for paging [7]
5. a) Explain the usage and structure of monitors with an example [7]
- b) Write about Characterization of deadlock by resource allocation graph. [7]
6. a) Briefly explain about single-level, two-level and Tree-Structured directories. [7]
- b) Discuss in detail the file allocation techniques: Sequential, Indexed and Linked. [7]
7. a) Explain each and every component of the Android architecture with a neat sketch. [7]
- b) Discuss in detail about Android Runtime Application Development. [7]

IV B.Tech II Semester Regular/Supplementary Examinations, June - 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) List out the types of System calls. [3]
b) Define Interprocess Communication [3]
c) Differentiate between Logical and Physical address space [2]
d) What is Resource-Allocation-Graph? [2]
e) Write short notes on File operations and types. [2]
f) What is the Linux? Why it is used? [2]

PART-B (4x14 = 56 Marks)

2. a) Explain in detail about the functions of System Call Interface. [7]
b) Discuss various challenges and issues that are to be considered while designing an operating system. [7]
3. a) Explain in detail, the sequence of actions taken by the operating system to context switch between processes. [7]
b) How communication takes place in a shared-memory environment? Explain. [7]
4. a) Consider the following page reference string 2,3,4,5,3,2,6,7,3,2,3,4,1,7, 1,4,3,2,3,4,7. Calculate the number of page faults with LRU, FIFO and optimal page replacement algorithms with frame size of 3. [7]
b) What is effective access time? Compute it for 70% hit ratio, 20 ns to search TLB and 100 ns to access memory. Observe the difference when it is changed to 90% hit ratio. [7]
5. a) Explain Banker's deadlock-avoidance algorithm with an illustration [7]
b) What is semaphore? Why it is important? Suggest the solution for bounded buffer problem with semaphores. [7]
6. a) Consider a disk queue with following requests for I/O to blocks on cylinders 30,70,115,130,110,80,20,25 (Assume disk head is at 90) [7]
Draw FCFS and SSTF scheduling and also determine how many times the disk head changes its direction for each of the above mentioned scheduling techniques.
b) Give a brief note on Disk scheduling algorithms. [7]
7. a) Describe the components of LINUX system. [7]
b) How Interrupts and Exceptions are handled in LINUX? Explain. [7]

