AR18

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) Which portions of the electromagnetic spectrum are of particular interest in Remote Sensing? Explain.   6M
    b) Explain in the Remote Sensing components   6M

(OR)

2. a) Explain about EMR's interaction with atmosphere.   6M
    b) Explain energy interaction with the surface of earth?   6M

UNIT-II

3. a) Explain different types of platforms.   6M
    b) State the concept of resolution? Explain the spatial and radiometric resolutions in detail   6M

(OR)

4. a) What are the sensors and their uses of IRS P6?   6M
    b) Explain in detail about different types of sensors based on orbit, energy source and data capture.   6M

UNIT-III

5. a) Differentiate between Supervised and Unsupervised Classification techniques.   6M
    b) Discuss various image enhancement techniques.   6M

(OR)

6. a) Discuss the various elements of Visual Interpretation techniques.   6M
    b) Explain the various geometric distortion of an image.   6M

UNIT-IV

7. a) Explain in detail the significance of Four M's of GIS with the help of a schematic representation.   6M
    b) Discuss the various raster data models used in GIS   6M

(OR)

8. a) Discuss various types of Map Projections used in GIS.   8M
    b) Differentiate between spatial and non-spatial data.   4M

UNIT-V

9. a) Differentiate between Raster and Vector Overlay Operations.   6M
    b) What is vector overlay operation? Explain.   6M

(OR)

10. a) Compare the arithmetic and logical operators in detail?   6M
    b) What are the remote sensing requirements for land use/ land cover mapping?   6M

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AR18

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech I Semester Regular & Supplementary Examinations, November, 2022
ELECTRICAL DISTRIBUTION SYSTEMS
(Electrical and Electronics Engineering)

Time: 3 Hours   Max Marks: 60

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) Why loads are classified in distribution systems and how they are classified? Explain their different characteristics.   8M
   b) The annual peak load of substation is 4500kW. The annual energy supplied to the primary feeder circuit is $2*10^6$ kWh. Find: i) The annual average power ii) The annual load factor.   4M

(OR)

2. a) Discuss in detail the factors which influence the selection of primary feeder rating.   6M
   b) Compare radial and loop type primary feeders   6M

UNIT-II

3. Calculate % voltage drop of hexagonally shaped area of distribution substation   12M

(OR)

4. a) How do you optimally locate the substations and explain the benefits derived from the optimal location.   8M
   b) What are the factors that are to be considered in selecting substation location?   4M

UNIT-III

5. a) Prove the power loss due to load currents in the conductors of the 2-phase, 3 wire lateral with multi-grounded neutral is approximately 1.64 times larger than the one in the equivalent 3-phase lateral   8M
   b) In terms of resistance and reactance of the circuit, derive the equation for load power factor for which voltage drop is minimum.   4M

(OR)

6   Consider a three phase, 3 wire 240V secondary system with   12M
balanced loads at A, B and C as shown in Figure Determine:
(i) The voltage drop in one phase of lateral (ii) The real power
per phase for each load (iii) The reactive power per phase for
each load.
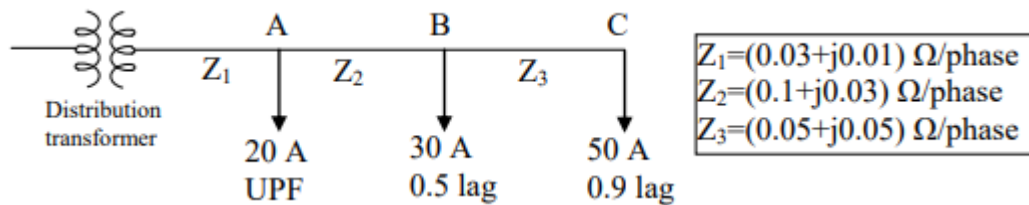
UNIT-IV

7. a) What are the advantages and disadvantages of fuses ?   4M
   b) Explain the principle of operation of circuit recloser.   8M

(OR)

8. a) What is the data required for the general coordination   5M
procedure?
   b) Explain recloser - recloser coordination.   7M

UNIT-V

9.   A 3 phase substation transformer has a name plate rating of   12M
7250KVA and a thermal capability of 120% of the name plate
rating. If the connected load is 8816 KVA with a 0.85 of
lagging power factor, determine the following,
The KVAR rating of the shunt capacitor tank required to
     decrease the KVA load of the transformer to its capability
     level.
     ii) The power factor of the corrected level

(OR)

10. a) Explain about the AVB in the distribution feeder with neat   6M
diagram.
    b) Explain the line drop compensation on voltage control.   6M

CODE: 18MEE431   **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech I Semester Regular & Supplementary Examinations, November, 2022
REFRIGERATION AND AIR CONDITIONING
(Mechanical Engineering)

Time: 3 Hours   **Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

Steam and Refrigeration tables are allowed

UNIT-I

1. a) Derive the expression for COP of a Reversed Carnot cycle with a neat sketch.   (6 M)

   b) A cold storage is to be maintained at -5°C while the surroundings are at 35°C. The heat leakage from the surroundings into the cold storage is estimated to be 29kW. The actual C.O.P of the refrigeration plant is one third of an ideal plant working between the same temperatures. Find the power required to drive the plant.   (6 M)

(OR)

2. a) Write the differences between simple aircraft refrigeration system and boot strap air evaporative refrigeration system.   (4 M)

   b) An air refrigerator system operating on Bell Coleman cycle, takes in air from cold room at 268 K and compresses it from 1 bar to 5.5 bar, the index of compression being 1.25. The compressed air is cooled to 300 K. The ambient temperature is 20ºC. Air expands in expander where the index of expansion is 1.35. Calculate: i) C.O.P of the system ii) Quantity of air circulated per minute for production of 1500 kg of ice per day at 0°C from water at 20ºC. iii) Capacity of the plant.   (8 M)

UNIT-II

3. a) Explain the effect of suction pressure and discharge pressure of compressor on the COP of a vapour compression refrigeration system.   (4 M)

   b) A vapour compression refrigerator works between the pressure limits of 60 bar and 25 bar. The working fluid is just dry at the end of the compression and there is no under cooling of the liquid before the expansion valve. Determine: i. C O P of the cycle and ii. Capacity of the refrigerator if the fluid flow is at the rate of 5 kg/min.   (8 M)

   Data:

P(bar)	T(k)	Enthalpy(kj/kg)		Entropy(kj/kg.k)	
		Liquid	Vapour	Liquid	vapour
60	295	151.96	293.29	0.554	1.0332
25	261	56.32	322.58	0.226	1.2464

(OR)

4. a) What is refrigerant? Can water be used as a refrigerant? Explain the limitations.   (4 M)

b) A refrigerator operates between temperature limits of 35°C and –8°C. (8 M) The refrigerant is 0.97 dry before leaving the evaporator coil. Find the condition of refrigerant entering the evaporator and COP of system. If the temperature rise of water circulating through the condenser is limited to 20°C, calculate mass flow rate of the coolant. Take Cp for superheated vapour as 3.35 kJ/kg-K.

UNIT-III

5. a) Derive the expression for maximum COP of an Ideal vapour (6 M) absorption refrigeration system.

b) Explain the practical vapour absorption refrigeration system with a (6 M) neat sketch.

(OR)

6. a) Write the thermodynamic requirements and properties of ideal (6 M) refrigerant-absorbent mixture.

b) Explain the working of Three fluid vapour absorption refrigeration (6 M) system with a neat sketch.

UNIT-IV

7. a) What is non conventional refrigeration system, explain. (4 M)

b) Explain the construction and working of pulse tube refrigeration (8 M) system with a neat sketch, specify applications, advantages and disadvantages.

(OR)

8. a) Explain i) Peltier effect ii) Seebeck effect (4 M)

b) Name the type of nonconventional refrigeration system used by (8 M) workers working in the mines, explain the same with a neat sketch.

UNIT-V

9. a) Explain Adiabatic Chemical Dehumidification sytem and represent (6 M) the same on psychrometric chart.

b) A stream of 2 m^3 /s of outdoor air at 4°C dry-bulb temperature and (6 M) 2°C thermodynamic wet-bulb temperature is adiabatically mixed with 6.25 m^3 /s of recirculated air at 25°C dry-bulb temperature and 50% Rh. Find the dry-bulb temperature and thermodynamic wet-bulb temperature of the resulting mixture.

(OR)

10. An air conditioned auditorium is to be maintained at 27°C dry bulb (12 M) temperature and 60% relative humidity. The ambient condition is 40°C dry bulb temperature and 30°C wet bulb temperature. The total sensible heat load is 100000 kJ/h and the total latent heat load is 40,000 kJ/h. 60% of the return air is recirculated and mixed with 40% of make-up air after the cooling coil. The condition of air leaving the cooling coil is at 18°C. Determine i) Room sensible heat factor; ii) The condition of air entering the auditorium; iii) The amount of make-up air; iv) Apparatus dew point. Show the processes on the psychometric chart.

AR18

CODE: 18ECE431　　　　　　　　　　　　　　　　　　　**SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech I Semester Regular & Supplementary Examinations, November, 2022

WIRELESS COMMUNICATION SYSTEMS
(Electronics and Communication Engineering)

Time: 3 Hours　　　　　　　　　　　　　　　　　　　　　　**Max Marks: 60**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1	a)	Illustrate the trends in cellular radio communications? Explain	6M
	b)	Describe paging system with necessary diagram.	6M

(OR)

2	a)	Illustrate how a telephone call is made from landline to mobile with the help of timing diagram.	6M
	b)	Compare various wireless communication systems in the aspects of its coverage range, carrier frequency, hardware cost and complexity.	6M

UNIT-II

3	a)	Bring out the differences between FDMA and CDMA multiple access schemes.	6M
	b)	Define Packet Radio and explain how throughput is improved in Slotted ALOHA.	6M

(OR)

4	a)	Outline the architecture and principle of SDMA scheme.	6M
	b)	Describe about TDMA Scheme with its frame structure.	6M

UNIT-III

5	a)	Compare various generations from 1G to 4G.	6M
	b)	Describe various upgrade paths for 2.5G technology.	6M

(OR)

6	a)	Describe various 3G Air interface technologies	6M
	b)	Illustrate the objectives and applications of 4G technology.	6M

UNIT-IV

7	a)	Describe the station and distribution services of IEEE 802.11 architecture.	6M
	b)	Write short notes on i) HiperLAN　　ii) PANs	6M

(OR)

8	a)	Compare various IEEE 802.11 a, b, g and n WLAN standards.	6M
	b)	Discuss various WLAN topologies.	6M

UNIT-V

9	a)	Discuss about IEEE 802.16 wireless standard and its enhancements.	6M
	b)	Describe about MANETs.	6M

(OR)

10		Illustrate the architecture of WiMAX for LOS and NLOS conditions.	12M

AR18

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) List the three processor types for implementing desired functionality. Explain any one processor type for embedded system. **6M**
   b) What is ASIP? What are advantages offered by an ASIP for designing an embedded system? **6M**

(OR)

2. a) List the design techniques required to design custom single purpose processor and explain briefly. **6M**
   b) What is the pipeline in Embedded System Design? Prove it that Pipeline is the optimized technique to improve the operation? **6M**

UNIT-II

3. a) What is the State machine? Explain the operation of finite state machine model for data Path. **6M**
   b) What is the role of Synchronization among process with neat diagram explain. **6M**

(OR)

4. a) Write a short note on Program-State Machine model. **6M**
   b) Explain about concurrent processes for a typical embedded system. **6M**

UNIT-III

5. a) Explain about IEEE 802.11 wireless protocol. **6M**
   b) Draw the diagram of external Hardware connected via RS232 with Embedded Processor and Explain how processor can interact to external world. **6M**

(OR)

6. a) Write a short note on Bluetooth protocol. **6M**
   b) Where is IEEE 1394 interface used? Explain the protocol architecture of IEEE 1394. **6M**

UNIT-IV

7. a) What is a semaphore? Explain how semaphores are useful in RTOS with suitable example? **6M**
   b) How Synchronization and communication is occurred in Tasks. **6M**

(OR)

8. a) What is the difference between mutex and semaphore? **6M**
   b) Write purpose of Message Queue? Explain the Message Queue states, Message Queue operations. **6M**

UNIT-V

9. a) Illustrate the concept of embedded Linux in embedded operating systems. **6M**
   b) Explain the memory management in Real time operating systems. **6M**

(OR)

10. a) What is priority inversion problem? Explain it briefly in RTOS. **6M**
    b) Illustrate the concept of RT-Linux in Real Time Operating Systems. **6M**

AR18

CODE: 18CSE442   **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech I Semester Regular & Supplementary Examinations, November, 2022
INTERNET OF THINGS
(Computer Science and Engineering)

Time: 3 Hours   Max Marks: 60

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) Define IoT. Describe the characteristics of IoT.   8M
   b) Mention the applications of IoT.   4M
   (OR)
2. With the help of neat diagrams, describe the levels of IoT with an example each.   12M

UNIT-II

3. What is M2M communication explain architecture and components of M2M Why has   12M
   M2M shifted to the Internet of things?
   (OR)
4. a) What is IoT and M2M?   6M
      Is IoT a subset of M2M? Justify.
   b) How does the IoT with SDN structure look like?   6M
      How does SDN work with IOT?

UNIT-III

5. a) Explain various advantages of using Python for programming in IoT.   6M
   b) Explain how IoT is used in weather monitoring system?   6M
   (OR)
6. a) Explain any 6 Python Packages of Interest for IoT.   6M
   b) Explain IoT Systems –. Logical Design using Python.   6M

UNIT-IV

7. a) Describe various Components of a Raspberry Pi device.   6M
   b) Illustrate how to interface a LED to raspberry pi and write a program to blink   6M
   (OR)
8. a) Explain about WAMP: AutoBahn for IoT.   6M
   b) Mention and explain the flavours of Linux OS supported by Raspberry pi device.   6M

UNIT-V

9. Explain how IoT technology used to enable the agricultural industry to increase   12M
   operational efficiency, lower costs, reduce waste, and improve the quality of their
   yield.
   (OR)
10. Explain how the IoT technology is impacting the healthcare sector and changing our   12M
    everyday lifestyle with the following examples:
       a. Health & Fitness monitoring b.Wearable electronics

AR18

CODE: 18ITE441   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech I Semester Regular & Supplementary Examinations, November, 2022
ADVANCED UNIX PROGRAMMING
(Information Technology)

Time: 3 Hours   Max Marks: 60

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Explain the various features provided by UNIX.	6 M
	b)	Explain the following general purpose utilities with the help of suitable examples: i) join ii) cmp iii) awk iv) tee v) cpio vi) who am i.	6 M

(OR)

2.	a)	Describe the functioning of Vi editor	6 M
	b)	Describe in detail the file system navigating commands.	6 M

UNIT-II

3.	a)	What is a Shell? Explain the two different duties of a Shell. How can you create a sub shell? How can you move to the parent shell after creating a sub shell?	6M
	b)	Explain the features of C shell.	6M

(OR)

4.	a)	Explain about the purpose and syntax of loops .	6M
	b)	Write in detail about Shell meta characters	6M

UNIT-III

5.	a)	Explain the following: banner, calendar, echo, ispell each with an example	6M
	b)	Write a neat diagram , Explain the kernel –shell relationship	6M

(OR)

6.	a)	What are process identifiers? Mention the commands for getting different IDs of calling process.	6M
	b)	Write a program that demonstrates the use of exit( ).	6M

UNIT-IV

7.	a)	What is a signal? How can it be generated? Also explain kernel's action on signal.	6M
	b)	Explain about the following interrupted system calls: pause( ), abort( ), system( ), sleep( ) functions with example.	6M

(OR)

8.	a)	Explain about sending signals & requesting on alarm signal functions with example.	6 M
	b)	Differences between reliable and unreliable signals.	6 M

UNIT-V

9.	a)	What is the pipe mechanism in Unix? Explain the types with example.	6M
	b)	What happens to the child process when the parent process kills/dies first? Explain with an example	6M

(OR)

10.		Define Synchronization & semaphores ? Explain in different types of semaphores in Unix .	12M

AR16

CODE: 16CE4025   **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech I Semester Regular & Supplementary Examinations, November, 2022
REMOTE SENSING AND GEOGRAPHICAL INFORMATION SYSTEM
(Civil Engineering)

Time: 3 Hours   **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Illustrate the Electro Magnetic Spectrum (EMS) and write the wavelength regions important to remote sensing.	7M
	b)	Explain about energy interactions with atmosphere.	7M

(OR)

2.	a)	Illustrate the components of remote sensing.	7M
	b)	List out the various advantages of remote sensing.	7M

UNIT-II

3.	a)	Describe the sensors used in the Landsat.	7M
	b)	Explain about space borne platforms.	7M

(OR)

4.	a)	List the various digital image data formats and explain	7M
	b)	Illustrate the types of orbits with neat diagrams?	7M

UNIT-III

5.	a)	Summarize the elements of visual interpretation.	7M
	b)	Explain about digital image processing.	7M

(OR)

6.		Differentiate between supervised and unsupervised classification.	14M

UNIT-IV

7.	a)	Define GIS. Briefly explain about spatial and Non-spatial data types with relevant examples.	7M
	b)	Write the advantages and disadvantages of vector data structures.	7M

(OR)

8.	a)	Differentiate vector data and raster data.	7M
	b)	Write about the components of GIS.	7M

UNIT-V

9.	a)	Explain about vector overlay operations.	7M
	b)	Explain overlay using a decision table.	7M

(OR)

10.	a)	Explain how GIS and remote sensing techniques are used in flood zone delineation and mapping.	14M

AR16

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) Discuss the future trends and advanced concepts relating to the satellite communication   7M
   b) Draw a basic block diagram of satellite communication system and explain each block in detail.   7M

(OR)

2. a) Explain the frequency allocations for satellite services   7M
   b) Why the uplink frequency is always greater than the downlink frequency in satellite communication? Explain.   7M

UNIT-II

. a) Explain the launching procedure of geo-stationary satellites using launch vehicles. Give diagrams   7M
   b) Explain in detail about Orbit perturbations.   7M

(OR)

4. a) Derive the expression for the time period of satellite's orbit.   7M
   b) A satellite is in an elliptical orbit with a perigee of 1000 km and an apogee of 4000 km. using a mean earth radius of 6378.14 km, find the period of the orbit.   7M

UNIT-III

5. a) Write notes on: (i) Space qualification (ii) Satellite antenna equipment reliability   7M
   b) Differentiate the multiplexing and multiple access techniques   7M

(OR)

6. a) What are the various subsystems in the satellite? Explain the power system.   7M
   b) Explain the redundancy type of approach used for improving reliability in satellite   7M

UNIT-IV

7. a) Explain the TDMA frame structure   7M
   b) Explain the spread spectrum transmission and reception.   7M

(OR)

8. a) What is G/T ratio of a satellite link? Derive the expression for it   7M
   b) Explain the principle of CDMA with an example   7M

UNIT-V

9. a) Which factors influences the design of any satellite communication systems? Explain.   7M
   b) Explain the terminal characteristics and common requirements of NGOS   7M

(OR)

10. a) Draw the general configuration of an earth station and explain each block   7M
    b) What are the different satellite constellation designs? Explain any one   7M

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AR16

CODE: 16CS4027   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B.Tech I Semester Supplementary Examinations, November, 2022
MOBILE COMPUTING
(Common to CSE & IT)

Time: 3 Hours   **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Define mobile communication and mobile computing.	6M
	b)	Explain novel applications of mobile communications.	8M
		(OR)	
2.	a)	Explain simple network and reference model in mobile communications	8M
	b)	Describe the limitation of mobile communications.	6M

UNIT-II

3.	a)	Explain about localization in GSM	7M
	b)	Describe GSM Signalling Protocol Architecture with neat diagram.	7M
		(OR)	
4.		Explain with neat diagram all the subsystems in GSM architecture	14M

UNIT-III

5.	a)	Why do Hidden and Exposed terminal problems arise? How it will affect the wireless networks?	7M
	b)	Identify the draw backs of classical aloha and explain how the slotted aloha is decrease collisions in the network	7M
		(OR)	
6.	a)	Briefly explain Reservation TDMA.	7M
	b)	Explain about CSMA/CA protocol with neat flowchart.	7M

UNIT-IV

7.	a)	Explain about entities and terminology in mobile Network Layer	7M
	b)	Describe registration process in Mobile network layer.	7M
		(OR)	
8.	a)	Define tunnelling? And explain IP-in-IP and Minimal encapsulation.	7M
	b)	What is the use of DHCP? And explain the client initialization process via DHCP	7M

UNIT-V

9.	a)	List out the advantages and disadvantages of I-TCP.	7M
	b)	Explain about snooping TCP with neat diagram	7M
		(OR)	
10.	a)	Describe the challenges of MANETs.	7M
	b)	Explain about DSDV protocol with a neat diagram.	7M