AR18

CODE: 18CEE431 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, February-2023

REMOTE SENSING AND GEOGRAPHICAL INFORMATION SYSTEM

(Civil 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)	Explain energy interaction with the surface of earth?	6M
	b)	Explain in the Remote Sensing components.	6M
		(OR)	
2.	a)	Explain in detail the spectral signatures of vegetation and soil.	6M
	b)	Explain the following terms related to interaction with atmosphere (i) Absorption (ii) Scattering (iii) Rayleigh Scattering (iv) Mie Scattering	6M

UNIT-II

3.	a)	State the concept of resolution? Explain the spatial and radiometric resolutions in detail.	6M
	b)	Discuss about different types of sensors used in the remote sensing.	6M
		(OR)	
4.	a)	Explain different types of platforms	6M
	b)	Discuss the various digital image data formats.	6M

UNIT-III

5.	a)	Discuss the various elements of Visual Interpretation techniques.	6M
	b)	Discuss the various image enhancement techniques.	6M
		(OR)	
6.	a)	Differentiate between Supervised and Unsupervised Classification techniques	6M
	b)	Explain in detail about the digital image processing	6M

UNIT-IV

7.	a)	Give the details of vector data structure and mention its merits and demerits in comparison with raster data.	6M
	b)	Discuss the various components of GIS in detail.	6M
		(OR)	
8.	a)	Discuss the various raster data models used in GIS.	6M
	b)	Discuss various types of Map Projections used in GIS.	6M

UNIT-V

9.	a)	Write about uses of logical operators in spatial analysis.	6M
	b)	What is vector overlay operation? Explain.	6M
		(OR)	
10.	a)	Give an account on satellite data requirements for flood zone mapping?	6M
	b)	Discuss the role and advantages of Remote Sensing and GIS in Land Use and Land Cover Mapping.	6M

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CODE: 18EET417 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, February-2023

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) Discuss the characteristics of the following loads: 6M
   (i) Agricultural (ii) Industrial (iii) Commercial
   (iv) Residential
   b) A 120MW substation delivers 120MW for 3 hours, 60MW for 8 hours and shutdown for the rest of each day. It is also shutdown for the maintenance for 15 days each year. Calculate its annual load factor. 6M

(OR)

2. a) Derive the relation between load factor and loss factor. 6M
   b) Explain the different type radial type primary distribution with a help of neat sketch. 6M

UNIT-II

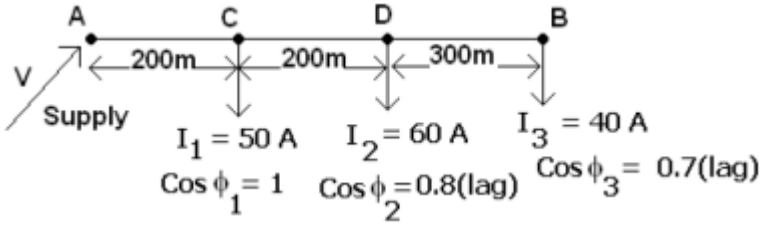
3. a) How do you optimally locate the substations and explain the benefits derived from optimal location. 6M
   b) Compare four and six feeder pattern of substations. 6M

(OR)

4. Analyze a substation service area with 'n' primary feeders. 12M

UNIT-III

5. a) Consider the single phase radial distribution given below 12M



The resistance and reactance of the line are 0.1 ohm/km and 0.2 ohm/km respectively; it is required to maintain the voltage at point B at 230V. Find the supply voltage, current, power factor, voltage drop in each section.

(OR)

6. a) Derive the expression for voltage drop and power loss in 3 phase primary lines. 6M
   b) Prove the power loss due to load currents in the conductors of the two phase, three wire lateral with multi grounded neutral is 1.64 times larger than the one in the equivalent three phase lateral. 6M

UNIT-IV

7.	a)	Explain the principle of operation of circuit reclosure and circuit breaker.	6M
	b)	What is protection system coordination? Explain the coordination procedure.	6M
		(OR)	
8.	a)	Explain the principle of operation of line sectionalizer.	6M
	b)	Summarize the data required for the general coordination procedure in distribution system.	6M

UNIT-V

9.	a)	State the procedure for best capacitor location	7M
	b)	A 3 phase 500 H.P., 50 Hz, 11 kV star connected induction motor has a full load efficiency of 85% at lag p.f. of 0.75 and is connected to a feeder. If it is desired to correct the p.f. of 0.9 lag load, determine the size of the capacitor bank in kVAr.	5M
		(OR)	
10.	a)	Illustrate the various methods of voltage control.	6M
	b)	Describe the operation of AVR/ AVB with neat diagrams.	6M

AR18

CODE: 18MEE431 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, February-2023

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

UNIT-I

1. a) Explain the difference between simple air craft refrigeration system and boot-strap air refrigeration system 6M

   b) Explain refrigeration system using Brayton cycle and show the state points on Temperature-Entropy diagram considering the irreversibility. 6M

(OR)

2. An air refrigerator working on Bell-Coleman cycle takes air into the compressor at 1 bar and 268 K. It is compressed in a compressor to 5 bar and cooled to 298 K at the same pressure. It is further expanded in the expander to 1 bar and discharged to take the cooling load. The isentropic efficiencies of the compressor and expander are 85% and 90% respectively. Determine : (i) Refrigeration capacity of the system if the air circulated is 40 kg/ min; (ii) Power required for the compressor; and (iii) C.O.P of the system 12M

UNIT-II

3. a) How does an actual vapour compression cycle differ from that of a theoretical cycle? 6M

   b) Draw the vapour compression refrigeration cycle on T-s diagram when the refrigerant is dry and saturated at the end of compression and find an expression for the C.O.P in terms of (i) Temperature and entropies; (ii)Enthalpy. 6M

(OR)

4. a) Explain the different method of improving the COP of simple vapour compression refrigeration cycle 4M

   b) A vapour compression machine is used to maintain a temperature of -23^0C in refrigerated space. The ambient temperature is 37^oC.The compressor takes in dry saturated vapour of F-12. A minimum10^0C temperature difference is required at the evaporator as well as condenser. There is no sub-cooling of liquid. If refrigerant flow is rate is 1kg/min Find (i) Tonnage of refrigeration. (ii)Power requirement (iii) Ratio of COP of this cycle to COP of Carnot cycle. 8M

UNIT-III

5. a) Derive an expression for the COP of an ideal vapour absorption system in terms of temperature T_G at which heat is supplied to the generator, the temperature T_E at Which heat is absorbed in the evaporator and the temperature T_C at which heat is discharged from the condenser and absorber.. 6M

   b) Draw a neat diagram of lithium bromide water absorption system and explain its working in major field of applications of this system. 6M

(OR)

6. a) Draw a neat diagram of three-fluid system of refrigeration (Electrolux refrigeration system) and explain its working. 6M

   b) Explain aqua ammonia vapour absorption system with neat sketch. 6M

UNIT-IV

7. a) Explain the working principle of vortex tube and explain that the energy exchange Phenomenon in vortex tube is not a violation of second law of thermodynamics. 6M

   b) Compare the working of different components of thermo-electric refrigeration system with the working of different components of vapour compression system 6M

(OR)

8. a) Explain pulse tube refrigeration with neat sketch. 6M

   b) State applications advantages of and disadvantages of vortex tube. 6M

UNIT-V

9. a) Explain in brief as to how the human body reacts to changes in temperature of environment. Also explain the effect of activities on the heat load calculation for comfort application. 6M

   b) Explain the concept of effective sensible heat factor for room to be air conditioned. How is it useful to find the ADP for fixed room design condition? 6M

(OR)

10. The following data apply to an air conditioning system Room sensible heat =41868 kJ/hr (11.63 kW); room latent heat=41868 kJ/hr(11.63kW); inside design condition= 25^0C, 50% RH, outside design condition=35^0C, DBT, 27.8^0 WBT. Return air from the room is mixed with the outside air before entering the cooling coil in the ratio of 4:1. Return air from the room is mixed with the cooling air, i.e. after the cooling coil in the ratio of 1:4. Cooling coil by pass factor is 0.1. The air may be reheated if necessary before supplying to the conditioned space. Assume ADP as 10^0C and determine, 12M

    i) Supply air conditions into the room
    ii) Refrigeration load due to the reheat
    iii) Total refrigeration capacity
    iv) The quantity of fresh air supplied.

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AR18

CODE: 18ECE432 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, February-2023

EMBEDDED AND REAL TIME OPERATING 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)	Define Design metric? List various design metrics for embedded system design and explain.	**6M**
	b)	Write the special features of typical microcontroller. Develop an interfacing diagram with a microcontroller, Consider anyone embedded application.	**6M**
		(OR)	
2.	a)	Explain the RT-level custom single purpose processor design using one example.	**6M**
	b)	Explain about architecture of general-purpose processor with neat diagrams.	**6M**

UNIT-II

3.	a)	How to create Data path model for Finite state Machine explain?	**6M**
	b)	List out various models of Embedded system & Explain program machine state model.	**6M**
		(OR)	
4.	a)	Distinguish between computational models, languages and implementations.	**6M**
	b)	Explain how condition variables provide synchronization among concurrently executing processes with example.	**6M**

UNIT-III

5.	a)	Write a short notes on Bluetooth Technology in Embedded Design.	**6M**
	b)	What are the Differences between IEEE1394 fire wire and IEEE802.11 for communication of Embedded System.	**6M**
		(OR)	
6.	a)	Explain the protocol architecture of Ethernet LAN.	**6M**
	b)	List the various types & need for serial Communication Bus. With neat figure explain UART of Serial Communication Bus & its Bus Protocol.	**6M**

UNIT-IV

7.	a)	Explain the interrupt service routines related to embedded RTOS. Discuss about the spurious interrupts.	**6M**
	b)	Define Event Registers? Describe Event Register Control Blocks	**6M**
		(OR)	
8.	a)	Define a task? Describe typical Task Operations.	**6M**
	b)	Define Pipe? Explain Pipe states, Pipe operations	**6M**

UNIT-V

9.	a)	Describe programmable interval Timers?	**6M**
	b)	What is priority inversion? What are the different techniques adopted for handling priority inversion?	**6M**
		(OR)	
10.	a)	Discuss in detail about Embedded Linux.	**6M**
	b)	Elaborate the concept of Handheld operating systems-Windows CE.	**6M**

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CODE: 18CSE442 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, February-2023

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 and explain characteristics of IOT	(6m)
	b)	Explain IOT Enabling Technology	(6m)
		(OR)	
2.	a)	Explain various IOT levels	(6m)
	b)	Discuss agriculture IOT	(6m)

UNIT-II

3.	a)	Compare IOT and M2M	(6m)
	b)	Explain M2M enabling technology	(6m)
		(OR)	
4.		Explain SNMP and limitations	(12m)

UNIT-III

5.		Discuss IOT system for weather monitoring	(12m)
		(OR)	
6.	a)	Explain python data types	(6m)
	b)	Give a short note on python packages of interest	(6m)

UNIT-IV

7.	a)	Explain IOT physical servers	(6m)
	b)	Discuss various cloud storage models	(6m)
		(OR)	
8.	a)	Explain WAMP	(6m)
	b)	Explain DJango	(6m)

UNIT-V

9.		Design Home Automation using IOT	(12m)
		(OR)	
10.	a)	Explain Apache spark	(6m)
	b)	Discuss Apache storm	(6m)

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AR16

CODE: 16EE4025 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, February-2023

HIGH VOLTAGE ENGINEERING

(Electrical and Electronics 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.		Briefly explain various numerical methods for estimation of electric field in dielectric materials. Discuss their relative advantages and disadvantages.	14M
		(OR)	
2.	a)	Explain how the electric stress can be estimated and controlled	7M
	b)	Define surge voltages. Explain how they are distributed in the windings of power apparatus	7M

UNIT-II

3.	a)	What is Pachen's law? How do you account for the minimum voltage for breakdown under a given 'p x d' condition?	7M
	b)	What are commercial liquid dielectrics? How are they di□erent from pure dielectrics?	7M
		(OR)	
4.		Explain thermal break down in solid dielectrics and how it is practically more significant than other mechanisms.	14M

UNIT-III

5.	a)	With a neat sketch explain Cockcroft-walton voltage multiplier circuit	7M
	b)	What are the drawbacks of Van De Graaff generator	7M
		(OR)	
6.	a)	Explain the working of Electro static voltmeter	7M
	b)	Explain any one method of measuring high frequency Impulse currents	7M

UNIT-IV

7.		Discuss the various test carried out on Insulators, circuit breaker at HV labs	14M
		(OR)	
8.		Discuss Partial Discharge measurement in detail.	14M

UNIT-V

9.	a)	Explain the working principle and operation of an electrostatic separator	7M
	b)	Explain how electrostatic copying is done using high voltages	7M
		(OR)	
10.		Explain the principle and operation of electrostatic separator with a neat diagram	14M

AR16

CODE: 16CS4027 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech I Semester Supplementary Examinations, February-2023

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)	Explain the mobile computing architecture with neat sketch.	7 M
	b)	Discuss in detail mobile system networks with suitable examples.	7 M
		(OR)	
2.	a)	Discuss the short history of wireless communication systems.	7 M
	b)	Describe and explain the limitations of the mobile communication systems.	7 M

UNIT-II

3.		Explain the architecture of GSM with neat sketch.	14 M
		(OR)	
4.	a)	Explain GSM Radio interface in a GSM system.	7 M
	b)	Describe and discuss the GSM mobile Services.	7 M

UNIT-III

5.	a)	What are the advantages of a fixed TDM pattern compared to random, demand driven TDM?	7 M
	b)	Explain the Comparisons of FDMA, CDMA mechanisms.	7 M
		(OR)	
6.		Discuss the problem of hidden and exposed terminals. Explain What happens in the case of such terminals if Aloha, slotted Aloha, reservation Aloha, or MACA is used?	14M

UNIT-IV

7.	a)	What is a triangular routing? Explain optimized mobile IP.	7 M
	b)	Explain Generic routing encapsulation (GRE) Protocol filed with neat sketch.	7 M
		(OR)	
8.	a)	Discuss different ways of tunnel IP encapsulations with neat diagrams.	7 M
	b)	What are the Entities and terminology understand in the mobile IP.	7 M

UNIT-V

9.		Describe Classical TCP improvements and explain any two Classical TCP improvements	14M
		(OR)	
10.	a)	List various MANET routing Algorithms and explain DSDV Routing algorithm	7 M
	b)	Explain security in MANETs.	7 M

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