AR16

CODE: 16CE4036 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular/Supplementary Examinations, July,2021

GROUND WATER DEVELOPMENT AND MANAGEMENT

(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)	Derive 3-D differential equation governing ground water flow and also mention the assumptions made while deriving it.	7M
	b)	Discuss about vertical distribution of ground water with a neat sketch.	7M
		(OR)	
2.	a)	Explain ground water hydrologic cycle.	7M
	b)	Why ground water flow contours are prepared and mention their applications.	7M

UNIT-II

3.	a)	Derive the expression for discharge for steady radial flow into a well fully penetrated in a confined aquifer.	7M
	b)	What is recuperation and derive the expression for discharge from open well by recuperation test?	7M
		(OR)	
4.	a)	Explain Dupit's and Theism's equations and also mention the assumptions made for the ground water analysis.	7M
	b)	Derive the non-equilibrium equation for ground water flow for unsteady case.	7M

UNIT-III

5.	a)	What is aerial photogrammetry and discuss its applications in sub-surface investigation for ground water?	7M
	b)	Discuss in detail about Geophysical logging method of ground water exploration.	7M
		(OR)	
6.	a)	Explain a case study on groundwater investigation by subsurface methods.	7M
	b)	Discuss in detail about Electrical resistivity method of ground water exploration.	7M

UNIT-IV

7.	a)	Explain the concept of Artificial Recharge of ground water and also mention various methods of Artificial Recharge.	7M
	b)	What is Remote sensing and GIS and explain applications of these methods in Artificial Recharge of Ground water?	7M
		(OR)	
8.	a)	Explain various methods of Artificial Recharge of ground water with neat sketches.	7M
	b)	Discuss any two case studies of Artificial Recharge of ground water by RS & GIS.	7M

UNIT-V

9.	a)	Explain various factors affecting saline water intrusion into aquifers.	7M
	b)	Discuss about ground water basin management with case studies.	7M
		(OR)	
10.	a)	Derive Ghyben-Herzberg relation between fresh and saline water with neat sketch.	7M
	b)	Discuss about step by step studies to be made and data to be collected for ground water basin management.	7M

AR16

CODE: 16CE4037 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular & Supplementary Examinations, July-2021

GROUND IMPROVEMENT TECHNIQUES

(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)	Explain the importance of Dewatering during construction and post construction stage?	7M
	b)	Explain dewatering by Open Sumps and Ditches also write its advantages and disadvantages.	7M
		(OR)	
2.	a)	Explain the well point method of dewatering? Mention also its advantages and disadvantages.	7M
	b)	Explain the deep well drainage method of dewatering? Mention also its advantages and disadvantages.	7M

UNIT-II

3.	a)	Explain the vibration at ground surface method of densifying granular soils.	7M
	b)	Explain the construction of geo drains.	7M
		(OR)	
4.	a)	Explain the method of Stone Columns for Densifying Cohesive soils.	7M
	b)	List the various methods of in-situ densification.	7M

UNIT-III

5.	a)	Explain the process of soil stabilization with cement and the factors affecting the stabilization.	7M
	b)	Describe in detail how chemicals are used in stabilizing the soil with the help of an example.	7M
		(OR)	
6.	a)	List the classification/methods of Grouting in civil engineering practice? Advantages.	7M
	b)	Write a detailed note on the various grout injection methods.	7M

UNIT-IV

7.	a)	Explain the functions and application of Geo Grids for filtration with neat sketches.	7M
	b)	Explain in detail about of Geo membranes for filtration with neat sketches.	7M
		(OR)	
8.	a)	Describe in detail about factors governing design of reinforced earth walls.	7M
	b)	Write in detail design principles of reinforced earth walls.	7M

UNIT-V

9.		Discuss different methods of determination of swell pressure in detail.	14M
		(OR)	
10.		Write a short note on Improvement of expansive soils.	14M

AR16

CODE: 16EE4031 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular & Supplementary Examinations, July-2021

NON CONVENTIONAL SOURCES OF ENERGY

(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.	a)	Describe the operation of non-convective solar pond for the solar energy collection and storage	7 M
	b)	Write the advantages and disadvantages of concentrating collectors over flat-plate types of solar collectors	7 M
		(OR)	
2.	a)	What is the status of non-conventional energy sources in India and what is their future prospectus	8 M
	b)	Describe the main features of various types of renewable energy resources	6 M

UNIT-II

3.	a)	Briefly describe cut-in speed and cut-out speed in wind energy conversion system	6 M
	b)	Explain Betz criteria and derive an expression for it.	8 M
		(OR)	
4.	a)	Discuss in detail the operation and control of a wind turbine. How the variations of wind velocity and its directions are taken care	7 M
	b)	List the differences between horizontal axis and vertical axis wind turbines.	7 M

UNIT-III

5.	a)	Briefly describe the principle and limitations of tidal power generation	7 M
	b)	Discuss the energy analysis of a hot Aquifer type Geothermal resource	7 M
		(OR)	
6.	a)	Explain about single basin arrangement in tidal power generation	8 M
	b)	List out various types of Geothermal resources	6 M

UNIT-IV

7.	a)	Briefly explain the different types of bio-gas plants with its schematic diagrams	7 M
	b)	What is biomass? What are the benefits of using biomass for power generation	7 M
		(OR)	
8.	a)	Explain the classification, advantages and disadvantages of bio-mass energy	7 M
	b)	Explain various sources of Bio-Mass energy.	7 M

UNIT-V

9.	a)	Explain the principle of MHD power generation with neat diagram	7 M
	b)	Discuss briefly Joule's effect, Seebeck effect, Thompson effect and Peltier effect.	7 M
		(OR)	
10.	a)	Describe the principle of working of a fuel cell with the help of neat sketch.	8 M
	b)	Classify fuel cells and differentiate between Fuel Cell and Battery	6 M

AR16

CODE: 16ME4035 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular & Supplementary Examinations, July-2021

UNCONVENTIONAL MACHINING PROCESSES

(Mechanical 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)	What are the characteristics of unconventional machining process	7 M
	b)	Explain the role of non-traditional processes in present industries	7 M
		(OR)	
2.	a)	Explain USM with a neat diagram	6 M
	b)	Explain Magnetostrictive transducer	8 M

UNIT-II

3.	a)	Write the factors that affects the performance of WJM process. Discuss their effects in brief	7 M
	b)	With neat sketch, explain magnetic abrasive finishing process	7 M
		(OR)	
4.	a)	Explain the working of an Abrasive Jet Machine with the help of a neat sketch	8 M
	b)	List out the materials of abrasives and nozzles used in Abrasive jet machining process	6 M

UNIT-III

5.	a)	Discuss different process parameters of electro chemical machining process	7 M
	b)	Explain the process Electro Chemical Honing, with a neat sketch	7 M
		(OR)	
6.	a)	How is the MRR determined in the Electro Chemical machining process	8 M
	b)	Explain the process of metal removal in Electro Chemical Grinding	6 M

UNIT-IV

7.	a)	Explain about R-C relaxation circuit used in EDM process	7 M
	b)	Explain the selection of different types of electrode materials in EDM process	7 M
		(OR)	
8.	a)	Discuss the factors to be considered in the selection of di-electric fluid used in EDM.	7 M
	b)	Explain with a neat sketch of electrical discharge grinding	7 M

UNIT-V

9.	a)	Describe about various process parameters effecting electron beam machining process	7 M
	b)	Explain the principle of Electron Beam Machining. Draw and label the parts of an EBM machine	7 M
		(OR)	
10.	a)	Explain working of Laser Beam Machining with neat sketch.	8 M
	b)	Explain the principle of PAM. Discuss the application of plasma for machining	6 M

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CODE: 16EC4037 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular & Supplementary Examinations, July-2021

EMBEDDED & REAL TIME OPERATING SYSTEMS

(Electronics and Communication 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)	Design the challenge metrics in Embedded Systems.	7M
	b)	Explain the IC technologies for Embedded Systems.	7M
		(OR)	
2.	a)	Discuss various Processor technologies for Embedded systems.	7M
	b)	Explain in detail about design technology for Embedded systems.	7M

UNIT-II

3.	a)	Discuss about common computational models.	7M
	b)	Explain Program-state machine model.	7M
		(OR)	
4.	a)	Explain Finite State Machine with data model.	7M
	b)	Discuss in detail concurrent process model.	7M

UNIT-III

5.	a)	Explain about RS232/UART Communication interface.	7M
	b)	Discuss in detail about Ethernet.	7M
		(OR)	
6.	a)	Explain IEEE 802.11.	7M
	b)	Discuss in detail about Infrared Communication.	7M

UNIT-IV

7.	a)	Explain the architecture of Kernel with neat diagram.	7M
	b)	Discuss the need of Interrupt Service Routines with example.	7M
		(OR)	
8.	a)	Explain Semaphores with a real time example.	7M
	b)	Write short notes on pipes-signals.	7M

UNIT-V

9.	a)	Discuss priority inversion problem in memory management.	7M
	b)	Explain Windows CE.	7M
		(OR)	
10.	a)	Discuss in detail about Embedded Linux.	7M
	b)	Explain about timers in Real Time operating systems.	7M

AR16

CODE: 16CS4036 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

IV B.Tech II Semester Regular & Supplementary Examinations, July-2021

MOBILE AD HOC AND SENSOR NETWORKS

(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)	Discuss the Applications of MANETs.	7M
	b)	Explain in detail Cellular Networks.	7M
		(OR)	
2.	a)	Discuss the Applications of Ad Hoc Wireless Networks.	7M
	b)	Discuss various characteristics of MANETs.	7M

UNIT-II

3.	a)	Discuss various issues occurred in designing a MAC.	7M
	b)	Explain CATA - Contention – Based Protocol with Reservation Mechanisms.	7M
		(OR)	
4.	a)	Explain MACAW Contention – Based Protocol.	7M
	b)	Explain DPS - Contention – Based MAC Protocol with Scheduling Mechanisms.	7M

UNIT-III

5.	a)	Discuss the issues in designing a Routing Protocol for Ad Hoc Wireless Networks.	7M
	b)	Explain DSDV Table –Driven Routing Protocol.	7M
		(OR)	
6.	a)	Explain AODV On- Demand Routing Protocol.	7M
	b)	Explain ZRP Hybrid routing Protocol.	7M

UNIT-IV

7.	a)	Discuss various applications of Sensor Networks.	7M
	b)	Discuss briefly about the issues in designing a Sensor Network.	7M
		(OR)	
8.		Explain in detail the Architecture of Wireless Sensor Network	14M

UNIT-V

9.		Discuss in detail the issues related to the Quality of Sensor Network.	14M
		(OR)	
10.	a)	Explain CSMA based MAC protocol.	7M
	b)	Write short notes on Real Time Communication.	7M

AR13

CODE: 13EC4044 SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
IV B. TECH II SEM SUPPLEMENTARY EXAMINATIONS, JULY, 2021

EMBEDDED & REAL TIME OPERATING SYSTEMS
(Electronics and Communication Engineering)

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

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) Give any two examples of embedded systems.
   b) Write about Trade-offs.
   c) What is FSM?
   d) Explain data flow model.
   e) Define model and language.
   f) What is USB? Where is it used?
   g) Write about kernel.
   h) Write any two applications of message queues
   i) List out various embedded operating systems
   j) Write Memory management function calls.

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a) Explain how to optimize a custom single purpose processor with example 6
   b) Discuss the various common characteristics of embedded systems 6

(OR)

3. a) Explain about processor technology in embedded system design. 6
   b) List out the differences between DSP processors and Micro controllers. 6

UNIT-II

4. a) Discuss the methods used to implement Communication among Processes? 6
   b) Explain concurrent process model with an example 6

(OR)

5. a) Explain about concurrent processes in embedded systems with suitable examples. 6
   b) Discuss about finite state machine with data model. (FSMD). 6

UNIT-III

6. a) Discuss in detail about the architecture of IEEE 802.11. 6
   b) Write the limitations of RS232. 6

(OR)

7. a) Explain about the need for communication interfaces. 6
   b) Write short notes on 6
      i) RS422/RS485 ii) Infrared

AR13

CODE: 13EC4044 SET-2

UNIT-IV

8.	a)	Draw and explain the architecture of kernel?	6
	b)	Explain about event registers and mail box and write its management function calls	6
		(OR)	
9.	a)	Define task and explain all the states of a task with diagrams.	6
	b)	Explain about pipes and its management function calls.	6

UNIT-V

10.	a)	Discuss in detail about embedded operating system Embedded LINUX?	6
	b)	Write short notes on Real time operating system RT LINUX?	6
		(OR)	
11.	a)	Explain about memory management in RTOS.	6
	b)	Describe the features of Windows CE. Why does the Windows CE have low interrupt latencies?	6

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