

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

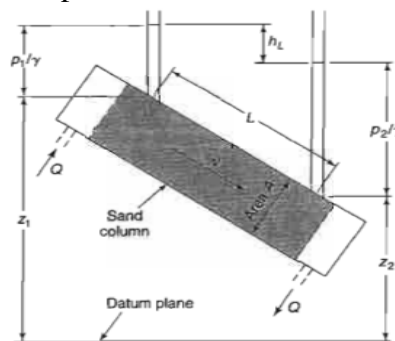
Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the Question must be answered at one place

UNIT-I

1. What are different types of aquifers? Draw neat sketches and explain 12M
(OR)
2. a) What are springs? Explain in detail? 6M
b) A field sample of an unconfined aquifer is packed in a test cylinder. The length and the diameter of the cylinder are 50 cm and 6 cm, respectively. The field sample is tested for a period of 3 min under a constant head difference of 16.3 cm. As a result, 45.2 cm³ of water is collected at the outlet. Determine the hydraulic conductivity of the aquifer sample 6M

**UNIT-II**

3. Explain the equation developed by Cooper Jacob method of solution? 12M
(OR)
4. Briefly explain about unsteady radial flow in an unconfined aquifer? 12M

UNIT-III

5. Explain briefly about subsurface method of ground water exploration? 12M
(OR)
6. Explain about seismic method for subsurface exploration? 12M

UNIT-IV

7. Discuss in detail about artificial recharge of ground water by any one method 12M
(OR)
8. Explain in detail about Recharge rates in groundwater? 12M

UNIT-V

9. Explain the Ghyben – Herzberg relation for saline water intrusion? 12M
(OR)
10. Explain briefly about fresh salt water relations on oceanic islands? 12M

AR16

CODE: 16EE4031

SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

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

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) Explain the working principle of a wind turbine with neat diagram and write its advantages. 8 M
- b) Explain maximum power point tracking procedure in a wind energy conversion system 6 M

(OR)

4. a) Briefly describe cut-in-speed and cut-out speed in wind energy conversion system. 7 M
- b) A horizontal axis wind turbine is installed at a location having free wind velocity of 15 m/s. the 80m diameter rotor has three blades attached to the hub. Find the rotational speed of the turbine for optimal energy extraction 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 reference to H₂ – O₂ cell 8 M
- b) Classify fuel cells and differentiate between Fuel Cell and Battery 6 M

AR16

CODE: 16ME4035

SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

IV B.Tech II Semester Supplementary Examinations, August, 2022

**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) Explain the importance of Unconventional Machining Processes 7 M
b) Discuss the classification of Unconventional Machining Processes 7 M
- (OR)
2. a) Write the advantages and disadvantages of USM process 8 M
b) Explain the various parameters influencing the MRR in USM process 6 M

UNIT-II

3. a) How is metal removed in abrasive jet machining process? Explain the mechanism with neat diagram 7 M
b) Distinguish between abrasive flow finishing and Magnetic abrasive finishing process 7 M
- (OR)
4. a) Explain the Abrasive Flow Finishing process 7 M
b) Explain the process elements of abrasive flow finishing process 7 M

UNIT-III

5. a) List the advantages and disadvantages of ECM process 7 M
b) Explain the process of metal removal in Electro Chemical Grinding 7 M
- (OR)
6. a) Describe the parameters and applications of chemical machining process 8 M
b) Briefly discuss the economics of ECM process 6 M

UNIT-IV

7. a) Explain the Electro discharge machining process with a neat sketch 7 M
b) Discuss the applications of Wire EDM process 7 M
- (OR)
8. a) Explain the functions and characteristics of dielectric fluid used in EDM process 8 M
b) Comment about the nature of spark eroded surfaces 6 M

UNIT-V

9. a) Describe about various process parameters effecting electron beam machining process 7 M
b) State the mechanism of metal removal, merits and demerits of laser beam machining process 7 M
- (OR)
10. a) Explain about plasma arc machining process with a neat sketch 8 M
b) Compare the plasma arc cutting with oxy-acetylene cutting process based on the process, merits and demerits 6 M

**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) Discuss about various design metrics used in Embedded system design. 8M
- b) Compare general purpose processors with single purpose processors. 6M

(OR)

2. a) Discuss about Instruction execution and pipelining concepts of general purpose processors. 7M
- b) Illustrate about Development environment of a general purpose processor. 7M

UNIT-II

3. a) Explain about Data Flow model with an example. 7M
- b) Elaborate the concept of finite state machines with data path model (FSMD). 7M

(OR)

4. a) Illustrate concurrent process model with an example. 7M
- b) Describe the synchronization among processes of a general purpose processor. 7M

UNIT-III

5. a) Briefly explain the concept of USB interface in communication. 7M
- b) Explain the role of RS232 in a serial communication process. 7M

(OR)

6. a) Write briefly about Telecommunication standards RS422 and RS485. 8M
- b) Explain about IEEE1394 with few of its applications. 6M

UNIT-IV

7. a) What are the different types of semaphores present in parallel programming environment? 7M
- b) Explain briefly about a task scheduler in a real time embedded system. 7M

(OR)

8. a) What is a deadlock condition. When does this occur. Explain in detail. 7M
- b) Explain how kernels provide mailbox service to various tasks. 7M

UNIT-V

9. a) Explain briefly about various operating systems used in embedded systems. 7M
- b) Explain briefly about verification approaches adopted in embedded system design. 7M

(OR)

10. a) Discuss briefly about priority inversion problem and explain how to avoid it. 7M
- b) Discuss about Windows CE operating system? 7M