

AR16

CODE: 16CE4036

SET-1

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

IV B.Tech II Semester Regular Examinations, September, 2020

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) Explain Darcy's law and its limitations 7M
- b) In an area of 100 ha, the water table dropped by 4.5m. If the Porosity is 30% and the specific retention is 10% determine i) the specific yield of the aquifer, ii) change in the groundwater storage. 7M

(OR)

2. a) Define the terms i) transmissibility ii) specific yield iii) storage coefficient 7M
- b) An aquifer has an average thickness of 60m and an aerial extent of 100 ha. Estimate the available groundwater storage if i) the aquifer is unconfined, and the fluctuation in GWT is observed as 15m, 7M
ii) the aquifer is confined, and piezometric head is lowered by 50m, which drains half the thickness of aquifer.
Assume a storage coefficient of 2×10^{-4} and a specific yield of 16%.

UNIT-II

3. a) Derive an expression for discharge from a well fully penetrating a confined aquifer 7M
- b) Explain Chow's method of determining the aquifer parameters using the pumping test data. 7M

(OR)

4. a) Explain the unsteady flow towards a well. List the conditions why non – equilibrium equations is preferred over the equilibrium conditions 7M
- b) A well penetrating a confined aquifer is pumped at a uniform rate $2500\text{m}^3/\text{day}$. The time period is $t=6 \text{ min}=4.2 \times 10^{-3} \text{ day}$ and $S=0.47$. The drawdown difference per log cycle of time is $\Delta S= 0.38\text{m}$. Then $W(V)=2.75$ and $V=0.038$. Find transmissibility and storage coefficient. 7M

UNIT-III

5. a) Explain in detail about geophysical logging 7M
b) Briefly discuss the merits and demerits of surface and subsurface investigations of ground water 7M
- (OR)**
6. a) Explain the detailed procedure of Electrical resistivity method to investigate for the occurrence of ground water 7M
b) Explain different types of photogrammetry 7M

UNIT-IV

7. a) What is artificial recharge of ground water? How do you decide sites for artificial recharge of ground water ? 7M
b) Explain the following artificial methods along with its design: 7M
i) Induced recharge methods
ii) Well method
- (OR)**
8. a) Why do we recharge ground water artificially? Explain the significance 7M
b) Write short notes on the following ground water recharge methods. 7M
i) Ditch and flooding type
ii) Canals and streams method

UNIT-V

9. a) Explain groundwater basin management 7M
b) Draw the layout of sequence of activities during a feasibility investigation for groundwater management 7M
- (OR)**
10. a) State and derive Ghyben Herzberg relation to study and measure saline water intrusion in aquifers. 7M
b) What are the measures to control sea water intrusion 7M

AR16

CODE: 16EE4031

SET-1

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

IV B.Tech II Semester Regular Examinations, September, 2020

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) Classify Non-Conventional Sources of Energy and compare them. 7M
b) Distinguish between Flat – plate type collectors and Concentrating collectors. 7M
- (OR)**
2. a) Write a short note on sizing of PV system and its storage. 7M
b) With a neat sketch, explain the working of solar pond electric power plant. 7M

UNIT-II

3. a) Discuss in detail the operation and control of a wind turbine. How the variations of wind velocity and its directions are taken care? 7M
b) Explain how the wind energy systems (WECS) are classified? Discuss in brief? 7M
- (OR)**
4. a) Give the detailed classification of wind turbines and explain the working of horizontal axis wind turbine with a neat sketch? 7M
b) Using Betz model of a wind turbine, derive the expression for power extracted from wind? 7M

UNIT-III

5. a) State the basic principle of tidal energy production and write major components of tidal power plant. 7M
b) Describe principle of geo-thermal energy? What are the limitations of harnessing geo-thermal energy? 7M
- (OR)**
6. a) Discuss the theory and working principle of ocean thermal energy conversion (OTEC) system. 7M
b) Mention the applications of OTEC systems. 7M

UNIT-IV

7. a) Explain the principles of Biomass conversion? 7M
b) Distinguish between Fixed and Float drum Biodigesters. 7M
- (OR)**
8. a) Explain the factors affecting bio digestion. 7M
b) What are the different factors which affect the size of the bio gas plants? 7M

UNIT-V

9. a) Classify the fuel cells? Describe the principle of working of fuel cell. 7M
b) Briefly Explain about Joule's effect, Seebeck effect. 7M
- (OR)**
10. a) Explain in detail about practical MHD generator? 7M
b) Describe the advantages of MHD systems. 7M

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SET-1

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

IV B.Tech II Semester Regular Examinations, September, 2020

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

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|-------|---|---|
| 1. a) | Compare the conventional and Unconventional Machining Processes in detail | 8 |
| b) | Explain the need of Unconventional machining processes. | 6 |

(OR)

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|-------|--|---|
| 2. a) | Discuss the influence process parameters and applications of USM | 6 |
| b) | Explain the USM machining advantages and limitations. | 8 |

UNIT-II

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|-------|--|---|
| 3. a) | Explain the method of AJM with help of schematic diagram. | 6 |
| b) | Explain the principle of AJM. Mention some of the specific applications. | 8 |

(OR)

- | | | |
|----|---|----|
| 4. | Explain the working principle and process parameters in WJM processes. List the applications, advantages and limitations of WJM | 14 |
|----|---|----|

UNIT-III

5. a) Mention any four difference between ECM and ECG 6M
b) Describe the chemistry involved in ECM process and explain the process parameters. 8M

(OR)

6. a) Describe the working principle, elements, advantages, limitations and applications of chemical machining 8M
b) Mention any Four Similarities between EDM and ECM 6M

UNIT-IV

7. a) Explain the construction and principle of electrical discharge machining with neat sketch. 8M
b) Explain the Process parameters, characteristics 6M

(OR)

8. a) Explain the classification and characteristics of various spark erosion Generators. 8M
b) Advantages, limitations and applications of the EDM process. 6M

UNIT-V

9. Explain with neat sketch construction, working principle of the Laser Beam Machining Process 14M

(OR)

10. Explain with neat sketch construction, working principle of the Plasma Arc Machining Process. 14M