

END SEMESTER THEORY EXAM; NOV./DEC.-2018

Program:	M. Tech. CE(Environmental Engineering)	Year/Semester:	1st sem.
Course/Subject:	Quantitative Analysis in Energy and Environment	Duration:	03:00 Hrs.
Course/Sub. Code:	13120145	Maximum Marks:	100
Roll No.:			

Instructions:-

1. Write your Roll No. on the Question paper.
2. Candidate should ensure that they have been provided correct question paper. Complaint(s) in this regard, if any, should be made within 15 minutes of the commencement of the exam. No complaint(s) will be entertained thereafter.
3. All Section are Compulsory. Parts of a question should be attempted in sequential order. Marks are indicated against each question.
4. Illustrate your answer with diagram wherever required.

- Q.1 a) what is green energy? What are its sources? (20)
b) Write informative notes on ? Ethical situations?

UNIT - I

- Q.2: a) Write brief note on wild-life protection act.
b) Discuss the role played by the non-conventional energy resources towards the protection of the environment. (20)

(OR)

- Q.3 a) Describe the sources and waste management of nuclear power energy.
b) Define ecosystem. Explain the importance and functions of producers, consumers and decomposers in an ecosystem

UNIT - II

- Q.4 a) What are the factors responsible for loss of plant and genetic biodiversity. Discuss steps needed to prevent them (20)
b) Explain the term Lapse rate and temperature inversion with reference to atmospheric structure.

(OR)

- Q.5: a) Discuss the sources and effects of particulates in the atmosphere.
b) What is the normal audio frequency range for a young healthy person? Write physiological and psychological effects of noise.

UNIT - III

- Q.6 What were Chernobyl disaster and Bhopal gas disaster? (20)

(OR)

- Q.7 a) Describe the role of Urban waste and modern agro-technology in soil pollution. Give their adverse effects and controlling measures
b) Describe the treatment for any common industrial waste water..

UNIT - IV

- Q.8 a) Explain hydrological cycle and oxygen cycle. (20)
- b) Explain the term Lapse rate and temperature inversion with reference to atmospheric structure.

(OR)

Q.9 Describe any two photochemical reactions occurring in the atmosphere..

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Program:	M. Tech. (CE - Environmental Engineering)	Year/Semester:	1st Sem.
Course/Subject:	Renewable Energy Technology	Duration:	03:00
Course/Subject Code:	13120146	Maximum Marks:	100
Roll No.:			

Instructions:-

1. Write your Roll No. on the Question paper.
2. Candidate should ensure that they have been provided correct question paper. Complaint(s) in this regard, if any, should be made within 15 minutes of the commencement of the exam. No complaint(s) will be entertained thereafter.
3. Attempt five questions in all, Q.1 is compulsory. Student are required attempt other four questions by selecting one question form each section. Parts of a question should be attempted in sequential order. Marks are indicated against each question.
4. Illustrate your answer with diagram wherever required.

- Q.1 (a) List the difference between Renewable and Non Renewable energy sources? (10)
(b) What are the advantages and Limitation of Renewable energy sources? (10)

SECTION - A

- Q.2 (a) With a neat diagram, explain the working principle of solar water heater? (10)
(b) State the advantage and disadvantage of concentrated collector over flat plate collector? (10)

(OR)

- Q.3 Classify the different method of storing solar energy. Describe thermal energy storage system? (20)

SECTION - B

- Q.4 (a) With a neat diagram, explain solar water pumping system? (10)
(b) With the help of neat diagram, describe the principle and working of central receiver system? (10)

(OR)

- Q.5 Explain the major advantages and disadvantages of solar PV system? (20)

SECTION - C

- Q.6 Explain the basic principle of wind energy conversion system? Classify the wind energy conversion system? (20)

(OR)

- Q.7 (a) What are the factor that affecting Biogas production? (10)
(b) Enlist the advantages and disadvantages of floating drum type plant? (10)

SECTION - D

- Q.8 (a) Explain various methods of production of hydrogen for the use of energy carieer? (10)
(b) Describe the classification of fuel cell. With a neat sketch explain the working of any fuel cell?(10)

(OR)

- Q.9 Describe the working of single basin tidal plant in detail? (20)

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Program:	M. Tech. (CE-Environmental Engineering)	Year/Semester:	1st Sem.
Course/Subject:	Physio-Chemical Biological Principles and Process	Duration:	03:00 Hrs.
Course/Subject Code:	13120147	Maximum Marks:	100
Roll No.:			

Instructions:-

1. Write your Roll No. on the Question paper.
2. Candidate should ensure that they have been provided correct question paper. Complaint(s) in this regard, if any, should be made within 15 minutes of the commencement of the exam. No complaint(s) will be entertained thereafter.
3. Attempt any five questions in all. Q.1 is compulsory. Attempt other four questions selecting one questions from each unit. Parts of a question should be attempted in sequential order. Marks are indicated against each question.
4. Illustrate your answer with diagram wherever required.

- Q.1:** Write short notes on: (20)
- (a) Methanogenesis.
 - (b) Adsorption.
 - (c) Ecological Niche.
 - (d) Denitrification.

UNIT - I

- Q.2:** What are the different sources of contamination of water and state the properties of water. (20)

(OR)

- Q.3:** Define colloids and classify them on the basis of: (20)
- (a) Types of particles of the dispersed phase and
 - (b) Physical state of the dispersion medium and of the dispersed phase.

UNIT - II

- Q.4:** Write explanatory notes on: (20)
- (a) Mortality (b) Survivorship (c) Solubility equilibria

(OR)

- Q.5:** (a) What are the different biotic and abiotic components of an ecosystem. (20)
(b) Briefly explain the term: (a) metabolism (b) Coenzymes (c) amino acids

UNIT - III

- Q.6:** Explain the following biogeochemical cycles: (20)
- (a) Nitrogen
 - (b) Carbon

(OR)

- Q.7:** Explain different distinct phases during the microbial growth in the liquid media, with the help of diagram. (20)

UNIT - IV

- Q.8:** Explain various types of natural ecosystems and differentiate from artificial ecosystem. (20)

(OR)

- Q.9:** Write explanatory notes on: (20)
- (a) Acid-base equilibria (b) Oxidation-reduction equilibria

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Program:	M. Tech (CE-Environmental Engineering)	Year/Semester:	1 st Sem.
Course/Subject:	Environmental Quality Monitoring	Duration:	03:00 hrs.
Subject Code:	13120148	Maximum Marks:	100
Roll No.:			

Instructions:-

1. Write your Roll No. on the Question paper.
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3. Attempt five questions in all. Q.1 is compulsory. Attempt other four questions by selecting one question from each unit. Parts of a question should be attempted in sequential order. Marks are indicated against each question.
4. Illustrate your answer with diagram wherever required.

- Q.1:** Write short notes on: (20)
- a) BOD.
 - b) COD.
 - c) Plate Counts.
 - d) Electrostatic Precipitation.

UNIT - I

- Q.2:** Describe MPN test- principle and methodology, for the microbial pollution. (20)

(OR)

- Q.3:** What considerations should be followed for the collection of accurate representative sample. (20)

UNIT - II

- Q.4:** Briefly explain the following: (20)

- a) Duration of sampling
- b) Location of sampling sites

(OR)

- Q.5:** Explain different gravimetric methods for the analysis of solids in water/ waste water. (20)

UNIT - III

- Q.6:** What are the methods of collecting gaseous samples from a stack? Describe any one with a neat sketch. (20)

(OR)

- Q.7:** Write explanatory notes on the following air sampling methods: (20)

- a) Sedimentation
- b) Filtration

UNIT - IV

- Q.8:** Describe the working principle of X-ray diffraction method and Emission Spectrometric method for the analysis of air samples. (20)

(OR)

- Q.9:** Write explanatory notes with advantages on the following: (20)

- a) Nephelometric Method
- b) Turbidimetric Method

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Program:	M.Tech. (CE-Environmental Engineering)	Year/Semester:	1 st Sem.
Course/Subject:	Energy Auditing and Conservation & Management	Duration:	03:00 hrs.
Subject Code:	13120149	Maximum Marks:	100
Roll No.:			
Instructions:-			
1. Write your Roll No. on the Question paper.			
2. Candidate should ensure that they have been provided correct question paper. Complaint(s) in this regard, if any, should be made within 15 minutes of the commencement of the exam. No complaint(s) will be entertained thereafter.			
3. Attempt five questions in all. Q.No. 1 is compulsory. Attempt other four questions, by selecting one question from each unit. All questions carry equal marks Parts of a question should be attempted in sequential order. Marks are indicated against each question.			
4. Illustrate your answer with diagram wherever required.			

- Q.1 a) Explain Energy Scenario of India? (10)
b) Explain the trends and pattern of Energy Consumption in India? (10)

UNIT-I

- Q.2: a) Explain the Challenges and opportunities for Non Conventional Energy in Indian perspective (10)
b) Define Energy Audit as per Energy Conservation Act. (10)

(OR)

- Q.3 a) Explain the methodology and steps of detailed energy audit with special reference to a power plant. (10)
b) Explain the basic components in a Steam system? (10)

UNIT-II

- Q.4 a) Explain Direct and in Direct methods for Evaluating Boiler Efficiencies (10)
b) Explain methods for conservation of energy in water pumping installations (10)

(OR)

- Q.5: a) State with reasons the need of Energy Audit in any industry (10)
b) Explain the potential of solar heat in the future energy system (10)

UNIT-III

- Q.6: Explain Sustainable building based on energy efficiency (20)

(OR)

- Q.7: a) Explain how Water Heat Recovery System can improve your home energy costs (10)
b) Explain the advantages and disadvantages of distributed system over centralized system. (10)

UNIT-IV

- Q.8 a) Explain the advantages and disadvantages of zero net energy (10)
b) Explain the role of Renewable energy Certification (REC) mechanism. (10)

(OR)

- Q.9: Explain different Energy Efficiency Improvement and Cost Saving techniques for a Petrochemical Industry and a Sugar Industry. (20)
