CETM-2015

ASSIGNMENT BOOKLET

CERTIFICATE IN ENERGY TECHNOLOGY AND MANAGEMENT (CETM)

Last date for submission:

30th March for January session
30th September for July session

School of Engineering and Technology
Indira Gandhi National Open University
Maidan Garhi, New Delhi-110 068

Dear Student,

We advise you to go through your programme guide carefully and read the section pertaining to assignments. A weightage of 30 per cent, as you are aware, has been earmarked for continuous evaluation which would consist of **one tutor-marked assignment** for each of OEY 001, OEY 002 and OEY 003 of this course. You have to score a minimum of 40 marks out of 100 marks in each of the assignments. **Submit your assignment response at your Study Centre.**

A feedback form is enclosed with this assignment. Please complete it after solving this assignment and send it to the Course Coordinator (CETM) on the address specified on the feedback form.

Instructions for Formatting Your Assignments

Before attempting the assignment please read the following instructions carefully.

1) On top of the first page of your TMA answer sheet, please write the details exactly in the following format:

ENROLMENT NO: ……

NAME: ……

ADDRESS: ……

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COURSE CODE: …….

COURSE TITLE: ……..

ASSIGNMENT NO.: ……..…

STUDY CENTRE: ……..….. **DATE:** ……..……...

PLEASE FOLLOW THE ABOVE FORMAT STRICTLY TO FACILITATE EVALUATION AND TO AVOID DELAY.

2) Use only foolscap size writing paper (but not of very thin variety) for writing your answers.

3) Leave 4 cm margin on the left, top and bottom of your answer sheet.

4) Your answers should be precise.

5) While solving problems, clearly indicate the question number along with the part being solved. Be precise. Recheck your work before submitting it.

Answer sheets received after the due date shall not be accepted.

We strongly feel that you should retain a copy of your assignment response to avoid any unforeseen situation and append, if possible, a photocopy of this booklet with your response.

We wish you good luck.

Assignment -1
(To be done **after** studying the course material)

Course Code: OEY 001
Assignment Code: OEY-01/TMA/2015
Maximum Marks: 100

Note:

1. In any question, whenever we ask you to suggest an activity we expect you to give one other than those covered in the units.

2. For any question worth 5 marks the word limit is 200 words, for a 10 mark question it is 350 words, and for a 15 mark question it is 500 words.

3. All questions are compulsory. The marks of each question are indicated against it.

Q.1. (a) Explain with examples the types of energy resources. 2x5
(b) Differentiate between renewable and non-renewable sources of energy giving examples.

Q.2. (a) Explain the merits and demerits of wind power.
(b) What do you understand by power factor? Explain the difference between Active Power and Apparent Power with an example.
(c) Define the calorific value and calculate the calorific values of coal. 3x5

Q.3 Explain the characterization and environmental effects of biomass. 10

Q.4. Discuss with examples and sketches the use of solar energy and its future 10

Q.5. (a) Why electricity is treated as high grade energy? 2x5
(b) Enumerate the characteristics of a good fuel.

Q.6. Explain the process parameters affecting the biogas production. 10

Q.7 Write short notes on the followings:
(a) Photovoltaic cells
(b) Biofuels
(c) Animal Power 3x5

Q.8 Differentiate between Combustion Analysis by Mass and by Volume with examples. 10

Q.9. (a) What do you understand by Climate Change?
(b) Name the key greenhouse gases, which drive the global warming. 2 x 5

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Assignment-2

(To be done **after** studying the course material)

Course Code: OEY 002

Assignment Code: OEY-02/TMA/2015

Maximum Marks:100

Note:

1. In any question, whenever we ask you to suggest an activity we expect you to give one other than those covered in the units.

2. For any question worth 5 marks the word limit is 200 words, for a 10 mark question it is 350 words, and for a 15 mark question it is 500 words.

3. All questions are compulsory. The marks of each question are indicated against it.

Q1. Define the following: 2*10=20

a) BOD
b) Digesters
c) Pyrolysis
d) Trombe wall
e) Solar isolation
f) Solar constant
g) Convection
h) Pay back period
i) Thermosyphon
j) PV effect

Q.2 (a) How can we get electricity from the sun and what are the components of a Photovoltaic (PV) system? 10

(b) Draw and explain current –voltage characteristics of a solar cell. 10

Q. 3 (a) Discuss fixed dome biogas digesters.

(b) Describe how you can take advantage of biomass based technologies

In your home and your community 2 x 5

Q.4. (a) Explain the difference between direct gain and indirect gain with suitable example. 10

(b) Classify the different categories of solar building system and also explain main features of three main type of buildings. 10

Q. 5. (a) Compare the various techniques used in drying. 10

(b) Draw the block diagram of solar drying system and explain its different components. 10

Q.6 Explain briefly the different technologies available for the conversion of bio-fuel. 10

Assignment-3

(To be done **after** studying the course material)

Course Code: OEY 003
Assignment Code: OEY-03/TMA/2015
Maximum Marks: 100

Note:

1. In any question, whenever we ask you to suggest an activity we expect you to give one other than those covered in the units.

2. For any question worth 5 marks the word limit is 200 words, for a 10 mark question it is 350 words, and for a 15 mark question it is 500 words.

3. All questions are compulsory. The marks of each question are indicated against it.

Q.1. Define energy audit. Discuss energy management with the help of suitable examples. 7

Q.2. Explain in brief the energy conservation measures in different industrial processes. 8

Q.3. Write down five good housekeeping measures to conserve electricity in your home. 5

Q.4. Briefly explain the methodology of rural energy planning. 10

Q.5. How do an Industry, nation and globe would benefit from energy efficiency programmes? 10

Q.6.(a) What is Life cycle cost analysis? What is the significance of inflation in it? 2×10=20
(b) Calculate the four different value of 'p' for 10% rate of interest.

Q.7 (a) Develop an energy balance for the boiler. 2×10=20
(b) How to conserve energy in air conditioning unit?

Q.8 Write short notes on the followings: 4×5=20
(a) Energy efficient lighting devices
(b) Renewable energy systems
(c) Combustion Analyzer
(d) Rural energy planning